THE JOURNAL OF

MEDICAL EDUCATION

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American Psychoanalytic Association, San Francisco, May 9-11. Dr. Douglas D. Bond, University Hospitals, Cleveland 6, Secretary.

International Congress of Internal Medicine—April 24-26, 1958; Sheraton Hotel, Philadelphia.

Fifth Annual meeting of the Society of Nuclear Medicine, Los Angeles, California, Beverly Hilton Hotel, June 19-21, 1958.

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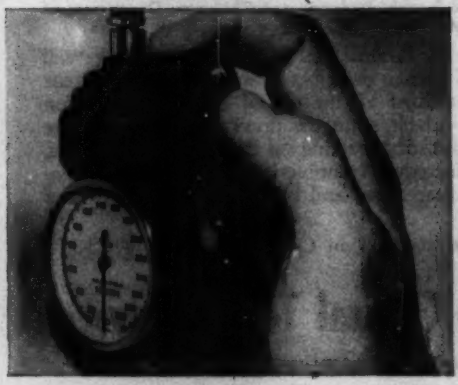

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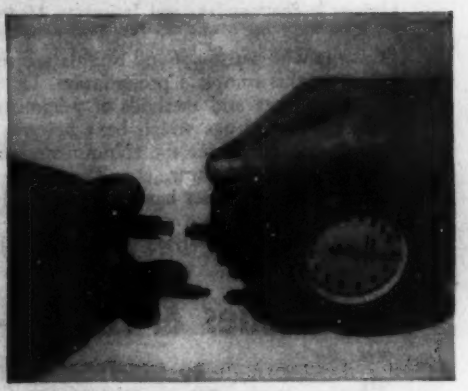

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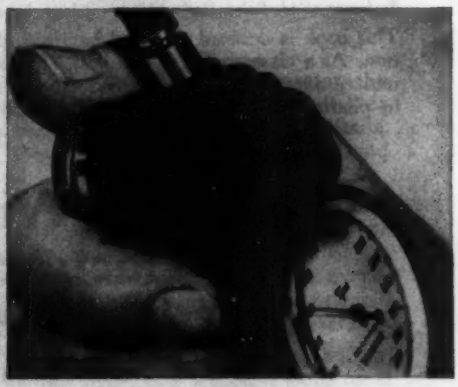

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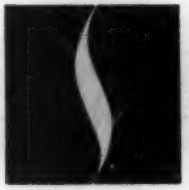

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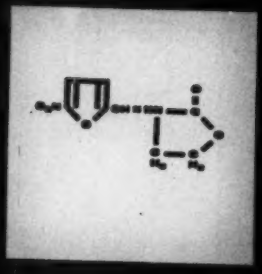

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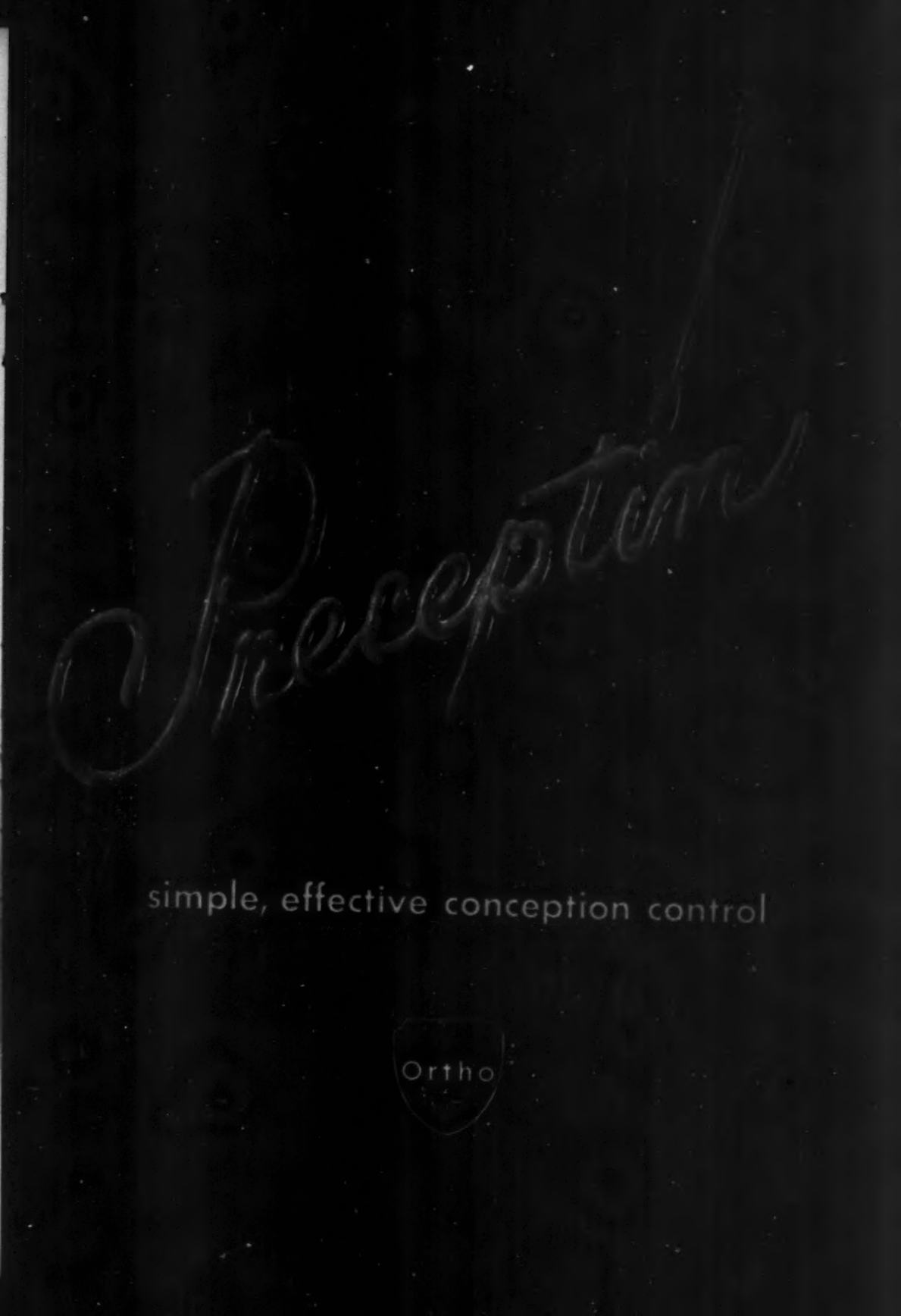
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Liberal Education and American Medicine*

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IN RECENT MONTHS our nation has witnessed several dramatic demonstrations of Russian technological progress. In the face of this, American higher education undoubtedly will be under great pressure to de-emphasize liberal education and devote itself increasingly to immediate technological goals. This sudden upsurge of concern for America's status in the world of science does not raise for the first time the issue of the liberal versus the technical in professional education. Since the late nineteenth century, and in some professions before that, educators have attempted to understand the proper balance between specialized and nonspecialized studies in the preparation of professional people.

This problem has long been a matter of concern among medical educators. Out of this concern has developed a wide-spread conviction that a doctor must be liberally educated—that he must have a broad understanding of himself, his profession, and the world around him if he is to be a physician in the best sense of the word.

At a time such as this, when the need to comprehend the importance of liberal education has assumed a new urgency, it is appropriate to examine closely its role in professional education. The history of medical education is a logical starting place, for here is revealed the growth of an exemplary commitment to the values of liberal education.

I. THE COLONIAL AND EARLY FEDERAL PERIOD

Before the first American medical colleges were established in the 1760's, there were about 3500 practitioners of medicine in the colonies, of whom approximately 10 per cent held the degree of doctor of medicine from some European university.[29] Of the remainder, some held certificates of apprenticeship to one of the educated physicians, ". . . while the vast majority dispensed their nostrum on their neighbors with no legal recognition and no justification for their activities, save the mere toleration of the community."[29]

The few men who did hold the M.D. degree in those early years were the products of a lengthy program of education which, in its emphasis on preliminary studies and preceptorship experiences, was analogous to the programs of our contemporary medical schools. A good example of such an education was that of John Morgan, founder of the medical department of the College of Philadelphia—now the University of

*This article is one of the first results of a study of liberal education and the professions which the Institute of Higher Education is conducting under the sponsorship of the Carnegie Corporation.
†Research Assistant.

Pennsylvania. He had taken his B.A. with the first class of the College in 1757. With his classical studies behind him, he served a preceptorship under Dr. John Redman, a noted physician of Philadelphia, and then did a stint as an army surgeon during the French and Indian War.[39, p. 2] By this time he had enjoyed the liberalizing effects of both a college education and his experiences as an apprentice and as a neophyte practitioner. At this point Morgan departed for Europe, where he spent the next 5 years earning his M.D. at the University of Edinburgh and studying medicine in London, Paris, and Rome. Fired with the determination to establish a medical school in the colonies, Morgan returned to the College of Philadelphia and, at the commencement of 1765, delivered his "Discourse upon the Institution of Medical Schools in America." In view of his broad background, it is not surprising that he placed considerable emphasis on the importance of education preliminary to the study of medicine:[38 pp. 16-18]

> It will not be improper to observe here, that young men ought to come well prepared for the study of Medicine, by having their minds enriched with all the aids they can receive from the languages, and the liberal arts. . . .
>
> There is no art yet known which may not contribute somewhat to the improvement of Medicine; nor is there any one which requires more assistance than that of Physic from every other science. Let young men, therefore, who would engage in the pursuit of Medicine or Surgery, make use of all industry, to possess themselves in good time of these acquisitions.

The student desiring to study medicine at John Morgan's new department in the College of Philadelphia had to establish his qualification for admission by showing that he held an arts degree, or by passing examinations in Latin, mathematics, and natural and experimental philosophy. Thereupon he entered a 7-year course of study and apprenticeship which led first to a Bachelor of Medicine degree and finally to the M.D.[29]

It may have been that such a rigorous program, while appropriate in the European universities, was too rich for the blood of medical students in America. At any rate, by 1776, roughly 10 years after their founding, the College of Philadelphia and Kings College (Columbia), between them, had conferred only 51 M.D. degrees.[39, p. 9] Thirteen years later, the trustees of the College of Philadelphia found it necessary to make a change in their medical program which was symbolic of a trend which dominated medical education for the next hundred years. Under pressure to produce more physicians to meet the needs of the rapidly growing colonies, the trustees abandoned the Bachelor of Medicine degree and reduced the term of training for the M.D. from 7 years to a minimum of 4 years, consisting of 2 years of apprenticeship followed by two years of lectures, the second year being a repetition of the first.[29]

The earliest American schools of medicine (Pennsylvania, Columbia, Harvard, and Yale) were founded under the sponsorship of established institutions of higher education. In spite of the early reduction of requirements for the M.D. degree, the college-affiliated schools continued throughout the nineteenth century to provide the best institutionalized medical education available in America. Unfortunately, they were destined to play a decreasing role in American medical education until the beginning of the twentieth century. Catering, as they did, to the aristocratic elements of colonial and early

federal society,[6, p. 128] the established colleges could not hope to educate physicians in quantities sufficient to meet the needs of a rapidly growing America. It was inevitable that the common people should take the matter into their own hands. It was inevitable, too, that in the rush to train doctors, the ideals of liberal preliminary education, perceived so clearly by John Morgan and his contemporaries in the early medical colleges, would become dim and all but disappear for a time from the medical education scene.

II. The Nineteenth Century

As the nineteenth century unfolded, two factors combined to influence the character of American medical education. First, in the early part of the century, before the scientific and methodological influences of the German universities had made themselves felt, medicine was taught as an art, rather than as a science. Much of the subject matter was based on tradition and imperfect investigation rather than scientific study.[3]

Since there was no large body of scientific knowledge, it followed that ". . . the only way to learn about disease was to take care of sick people."[23] If to this concept of medical education is added the effect of the shift of population westward—away from the college-affiliated medical schools, there evolves a pattern which explains in large part the phenomenon of the proprietary medical schools which dominated American medical education for most of the nineteenth century. These schools were usually founded in response to the need for more doctors—largely in the South and West.[29] Courses were taught by a small group of practicing physicians who came together 3 or 4 months of the year to supplement the practical experiences their students were receiving as apprentices.[1] The curriculum consisted of a series of lectures repeated from year to year—evidently with the expectation that experiences at the bedside would give the lectures new meaning for the 2nd-year student. There were no laboratories to speak of, nor was there much need of any, in view of the empirical nature of medical studies as then conceived.

The proprietary schools were quick to respond to America's need for doctors. In 1800, there were only four medical schools; by 1860, there were 66; and by 1900, 160.[13] With this proliferation came debasement. Initially motivated by the needs of society and the profession, the proprietor-teachers soon fell into unsavory practices which, toward the end of the century, brought medical education to its nadir. Competition for students and the virtual absence of admission standards, unwillingness to impair income by dismissing poor students, petty jealousies among teachers, and lack of essential equipment were all part of the picture. A contemporary writer described things at their worst:[29]

> . . . the candidate for entrance upon medical study was acceptable if he could read and write his own language . . . during the medical course no time was devoted to botany, comparative anatomy, physics, or any subjects that make any part of a liberal education . . . It was possible for a young man from the shop or farm, whose education represented what he had gleaned in a few winter terms of school, and a few months as a busy practitioner's office boy and coachman—with the privilege of reading in the doctor's books at odd hours—it was possible for a young man, with such a preliminary training, to attend two winter terms of 12 to 16 weeks each, hearing the same lectures and attending the same clinics the second year as the first, to

receive the degree of *Doctor of Medicine* which carried with it a license to practice anywhere in the country.

Within the context of proprietary medical education there was little interest in the proposition that a man should prepare for the study of medicine by obtaining a liberal arts education. Some of the reasons for this are obvious. Time was certainly a factor. During the westward expansion and the Civil War, America needed doctors quickly and could not afford to wait while they absorbed the liberal arts. The social atmosphere was another factor. Many medical educators were opposed to the idea of establishing a liberal arts education, with all of its aristocratic connotations, as a prerequisite to medical study:[5]

> My position is that the adoption of that resolution [to require a college education] by medical schools would necessarily, and forever exclude a large class of worthy and meritorious young men, whose only fault, according to that resolution, in my judgment, is, that they were not born with "a silver spoon in their mouths" . . . Nothing but native original talent and industry places one man above another in republics.

The American penchant for practicality was undoubtedly another factor in the exclusion of liberal studies from the education of all but a few nineteenth-century doctors. The classical liberal arts education was considered by some to be an unessential luxury, having little to do with the practice of medicine:[37]

> A collegiate education is one of the luxuries of life, never a necessity . . . It seems to me that the elevation of the medical profession in the matter of general education must be secured through the medical schools themselves or the universities of which they form a part. Medical incompetence must be weeded out there and not in the colleges which have practically nothing to do with medicine.

The proprietary schools, then, were a reflection of the needs and wants of the people. Unfortunately, their commercial nature contradicted good educational practice. Unfortunately, too, the system denied the benefits of a liberal arts education to an overwhelming proportion of the physicians trained during this period.

It would be wrong to leave the nineteenth century without pointing out that there were a number of important enclaves of resistance to the illiberal influence of the proprietary schools. Many well educated doctors, and others who were not so well educated, saw the liberal arts as a solution to some of the fundamental problems of medical education. Deeply aware of the declining status of their profession, some physicians viewed the liberal arts as a means of reestablishing themselves on a par with law and theology. Others believed that the mental discipline and broad culture provided by the liberal arts were essential equipment for the student entering the study of medicine. Still others maintained that the benefits of a liberal arts education were directly related to the successful practice of medicine.

Improving the prestige of the profession

During the latter part of the century, the American Academy of Medicine, concerned over the low prestige of the profession, continually urged that a college degree be made prerequisite to the study of medicine. In 1882, Dr. Charles McIntyre, a member of the Academy, attempted to throw light on the inferior status of the profession by assembling statistics concerning the number of college-bred men in schools of medicine. After sampling about half of the schools in

the country, he concluded that only about 9 per cent of the students had earned college degrees. This compared with approximately 20 per cent in the schools of law and theology.[36] McIntyre[1] concluded that the main function of the American Academy of Medicine should be "to convince the public that a preliminary training of the mind is absolutely necessary for the greatest efficiency of medical men."[36]

Facilitating the study of Medicine.

Many of those who favored preparatory studies in the liberal arts focused attention on their value as a means of improving the student's ability to cope with the subject matter of medicine. Daniel Drake, founder of the Medical College of Ohio in Cincinnati and one of the great men in American medical education, was an early and ardent proponent of liberal preliminary studies. In his *Inaugural Discourse* (1820) he recommended that medical students prepare themselves by studying such subjects as philosophy, civil history, literature, and languages.[18, p. 10]

Writing in the late 1870's, a Pennsylvania physician stated the case for the liberal arts in a forthright manner:[48]

> Every preceptor and professor knows how much better a young man with a liberal education can pursue his studies, and with how much more credit he will pass his final examination, than the uneducated and untrained, other things being equalled.

Improving the practice of medicine.

Besides those who saw a liberal arts education as a source of prestige for the profession and as a means toward greater efficiency in the study of medicine, there were educators who took the very practical point of view that the liberal arts could make better practitioners.

A rather wistful statement of this latter attitude came from a small-town physician who did not attend college:[21]

> The writer can speak from personal knowledge as the one who did not have a thorough literary training. While I have no particular reason to be ashamed of what I have accomplished under the circumstances, there is no doubt in my mind that a man without a thorough literary schooling has no business to undertake the study of medicine; he never did have, but especially is this true now. Had I been well-educated, it might have fallen to my lot to have accomplished something of importance in my profession. As it is, it has been a hard struggle to even reach respectability.

The president of Lafayette College, writing in 1897, drew a strong, straight line between the liberal arts classroom and the sick room:[50]

> Can there be any question that such a training is needed by the physician? Is it not evident that the applied logic of Latin and Greek, the sound and searching discipline of mathematics, the broad outlook of psychology and ethics, and the rich wisdom of literature and history, will make stronger and sounder men for the hospital and sickroom? Is four years on the borderline of manhood too large a price to pay for such a preparation for life?

A retrospective look at the development of medical education in the nineteenth century suggests that the regnant concern was with the quantity rather than with the quality of

[1] By McIntyre's own admission, these figures were based on fragmentary evidence. The fact that they are similar to data compiled by Tyson[49] at about the same time, suggests that they are generally indicative of the situation as it was.

Statistics compiled in more recent years by the Council on Medical Education of the American Medical Association dramatize the change which took place in medical education shortly after the turn of the century. In 1910, 15.3 per cent of students graduating from American medical schools held the bachelor's degree. By 1925, the figure had risen to 61.2 per cent.[13] Today the same statistic stands at 85-90 per cent. (Walter S. Wiggins, Associate Secretary, Council on Medical Education and Hospitals, in a letter dated August 29, 1957.)

physicians. On the other hand, throughout the period, there were voices speaking in behalf of quality and the deferred goals of liberal education. Apparently, conditions were not right for these voices to be heard widely. Only later, after the study of medicine had matured into a highly respected science, were the advocates of liberal education able to establish their claim on the time of the aspiring doctor.

III. The Drive To Raise Standards, 1880-1920

It would be folly to propose an exact date for the beginning of the transformation which medical education underwent during the final years of the nineteenth century and the first two decades of the twentieth century. Nevertheless, it can be argued that as early as the 1870's and '80's, new forces began to impinge upon medical education which gave a refreshing cogency to the rising tide of demands for higher standards. One of these forces was science. During this period, while Koch, Pasteur, and Meister were performing miracles in their laboratories, Americans across the ocean were spell-bound by the broad vistas which the new objective approach to science opened before them. Johns Hopkins University was founded in 1876 as an expression in America of German ideals of scientific research. Throughout the country liberal arts colleges were transformed into universities with numerous graduate and undergraduate divisions devoted to the disciplines which arose under the influence of the new science.

The discoveries that flowed so freely from the European laboratories were destined to have a profound effect upon American medical education. New laboratory courses such as immunology, bacteriology, histology, and embryology were added to the medical curriculum. However, the price of imitation was high. Laboratory equipment and European-trained professors were not cheap. The proprietary schools, which had operated at a comfortable margin under the inexpensive lecture system, suddenly found themselves in trouble. Some sought financial security under the protecting wings of well endowed universities; others, unable to afford expensive equipment or to find students willing to take their chances in a marginal school, simply closed their doors.

Another factor contributed to the drive for higher standards and hastened the death of the proprietary schools. During the 15 years following the turn of the century, medical educators seem to have been hypnotized by the problems of evaluating and accrediting medical and premedical programs. At first, confusion reigned. The Association of American Medical Colleges, the Council on Medical Education of the American Medical Association, and the various state licensing boards were all trying to enforce their own standards. However, changes were in the offing. By the time the century was 10 years old, the various accrediting agencies had begun working together to standardize requirements and improve the quality of medical and premedical education.

At about this time, too, the philanthropic foundations entered the picture, lending their prestige and, more importantly, their funds to the cause of higher standards. In 1910, the famous Flexner report appeared, under the sponsorship of the Carnegie Foundation. The report—itself a manifestation of the scientific orientation of the period—revealed what

most medical educators knew all too well, that medical education was in a bad state. Dr. Flexner's exposure of the situation occurred just at the right moment to catalyze the trend toward the dissolution of marginal medical schools which had begun 10 years earlier under pressure from the accrediting agencies and the imperious demands of the new science. From 1900 to 1915 the number of medical schools in America fell by nearly half. In 1900 there were 160; in 1910 there were 131; and by 1915, there were only 96 survivors.[13]

Foundation wealth, German scientific ideals, the new-style American universities, and the assiduous accrediting agencies had done the trick. By 1920, American medical education had attained much of the prestige it had sought so long.

A close look at the status of liberal education during the period from 1880 to 1920 brings into focus three characteristic issues to which the fortunes of liberal education were closely tied.

The role of science.

The first of these had to do with the place of science in the total educational pattern of the doctor. The subject matter of the new science came as a flood upon the medical schools. There were many proposals for relieving the pressure. One group of educators recommended that the medical curriculum be extended to 5 years and that, to save time, preliminary education beyond the high school be cut to a minimum. Writing in 1910, Dr. John Scane of McGill University implied that the technical demands of medicine were too great to permit concern for liberal preliminary education:[44]

> . . . at least a fair proportion of the students' best mental years should be *spent in acquiring a knowledge of the science which is to form the basis of his life's work.* One or, at most, two years in the (college) academic course should be sufficient, and most of that time should be spent in the study of science subjects.

Other educators proposed to deal with the same problem by pushing the basic science courses out of the medical schools down into the liberal arts colleges. Thus, while they advocated additional collegiate level preliminary education, they fostered a program which had little to do with the traditional liberalizing function of the liberal arts colleges. Early in his career, Dr. Fred Zapffe, longtime Secretary of the Association of American Medical Colleges, phrased the problem clearly:[55]

> We must have more time for teaching medical subjects. All departments are demanding more time. We stand in greater need of better education in the medical school than in general cultural education . . . Shall we require two years of college work for admission to the medical school and unload into these two years some of the work now done in the medical school, such as anatomy, chemistry, some histology, some embryology, and perhaps, some bacteriology, . . .

Thus, while medical educators concentrated on science as a means of raising professional standards, their perception of the values of liberal education was obscured. A good example of "tunnel vision" among medical educators occurred at the 1909 meeting of the Association of American Medical Colleges. Following a speech by William Carpenter of Columbia University on the Combined Premedical-Medical Course, several leading medical educators joined in an extemporaneous discussion which documents their preoccupation with science and their indifference to liberal education:[11]

> Dr. Egbert LeFevre (New York University-Bellevue Medical Center): We all believe that the medical man should have as much general

cultural education as possible, but in the general problem of medical education, we are chiefly concerned in arranging our courses so that the student will be properly prepared in the technical subjects and not for its general culture.

Dr. W. F. R. Phillips (George Washington University): . . . my experience with A.B. men who have drifted into the medical school is that they know as little that is useful, that will help to make doctors of them, as any people I have ever met. I would rather take a high school student who has attended a good technical high school than a general A.B. man who has elected his course without any reference to what he wishes to use it for.

Science to men such as these was a religion. It offered salvation. Only after they had tasted the fruits of salvation, did they begin to realize that a thorough knowledge of science did not, in itself, make a good physician. This realization produced some amazing changes of attitude among medical men. The pronouncements of Dr. W. F. R. Phillips are an excellent example. In 1909 he bluntly stated that the A.B. degree with its nonprofessional emphasis had little to do with the preparation of good doctors (see above). Nine years later, Dr. Phillips wrote one of the finest statements in the literature of this period advocating liberal education in the preparation of physicians:[40]

Experience has shown unmistakably that progress in medicine has been often halted by the intellectual habit of seeing only straight ahead. Progress in medicine, efficiency in individual practice, would undoubtedly be greater if medical men could have more extensive acquaintance and familiarity with the facts and views of nature which are constantly being contributed by workers in other fields of endeavor. We all wish progress to be made in our profession and, I believe, the best way to make that progress is by keeping in touch with what is going on in other fields about us. Our profession, our science, is in reality built so largely on the general foundations of knowledge, as largely as it is on the special foundation that we made in our medical curriculum, and the best educational preparation to bring to the study of medicine is the study of everything else than that which one will study specifically in the medical school.

The free elective system.

A second issue was destined to change the status, and even the meaning, of liberal education. In the late 1800's, under the leadership of Charles William Eliot of Harvard, there arose a movement to reassess the meaning of liberal education. For the adherents of this movement, the habit of identifying liberal education with the classical literary curriculum was unacceptable. From their point of view, the rising birthrate of new disciplines demanded an expanded definition of liberal or cultural education.

Were the new scientific studies, many of which had become important in medical education, to be excluded from this definition? By no means. As Eliot put it, "The choice offered to the student does not lie between liberal and professional or utilitarian studies. All studies which are open to him are liberal and disciplinary, not narrow or special."[17] A logical sequence to such a statement as this is the assertion that professional education—specifically, medical education—can inculcate many of the values which had previously been associated exclusively with the traditional liberal arts curriculum. Eliot was unequivocal:[17]

There is no line between culture subjects and professional subjects. There is absolutely no line. I read the other day an admirable definition by President Hadley of what he wanted the college to effect, not the professional school—presumably Yale College. He said he wanted to teach the college youth civic duty and reli-

> gious earnestness, and health of mind and religious aspiration; he wanted to teach him public service as the root of American life and therefore of American education. Now, that is as true as gospel, gentlemen. It is the educational gospel. But, in my judgment, it is not the gospel of the American college only, it is the gospel of American education from the primary schools through the professional school, and I know of no subject better adapted to develop the sense of public service, and of moral and religious fairness, than the subjects taught in the medical school.

Eliot's relativism concerning the meaning of liberal education was catching. Medical educators, especially, were interested in the idea that cultural growth was not tied to a fixed body of knowledge. Speaking before the 1913 meeting of the Association of American Medical Colleges, Dr. Egbert LeFevre used this argument in defense of the sciences:[34]

> It has been said that these subjects (natural sciences, chemistry, physics and biology) are lacking in educational value from the point of view of "general training;" that they do not provide mental training for the man who has no intention of entering a profession. The answer to this objection is that the fault is not in the subjects, but in the manner in which they are taught and also the content of the course.

This broader definition of liberal education impinged on medical education in another way. Eliot and his followers asserted that one of the marks of a liberally educated man was ". . . a real mastery of some small portion of the human store of knowledge."[47] This being accepted, then the emphasis on specialization which characterized medical education during this period might, paradoxically, be considered a source of cultural enrichment. Dr. John Sundwall of the University of Kansas asserted that "The cultural value of a subject depends greatly upon the intensity to which it is pursued. The more one knows regarding a particular subject the greater is the insight with its associated refining effects."[47] Properly taught, specialized subjects could open up for the student, new relationships among disciplines. In this sense such subjects were liberalizing.

Thus, the period which saw revolutionary changes in medical education also produced a new and broader concept of the meaning of liberal education. Gradually, the classical literary curriculum lost its monopoly; new disciplines such as sociology, psychology, and the new sciences joined the liberal arts curriculum; specialized studies took on new dignity through the contention that they too could have a liberalizing effect upon the learner.

To recapitulate, as the profession strove to raise standards, the character of liberal education in medicine was subject to the influences of the new science; it also felt the effects of efforts to redefine the meaning of liberal education. In addition, it changed as a result of the drive to lengthen the premedical program.

Extended premedical requirements

During this period, premedical requirements were extended first to 4 years of high school; then to 1, and, in 1918, to 2 years of college. In 1907, as interest in the 1-year collegiate premedical program was gaining strength, only two medical schools demanded a bachelors degree for entrance; one school required 3 years of college work; four maintained a 2-year prerequisite; and 40 schools, while at the time requiring only 4 years of high school, had committed themselves to requiring 1 year of college by 1910.[33]

Among the early proponents of the

college requirement was a group who saw it largely as a means of meeting the demands of the new sciences which were establishing themselves in the medical schools. As one writer pointed out, the academic high school with its emphasis on the classics was deficient in science offerings. Only in the liberal arts colleges which had recently introduced fundamental courses in the new laboratory sciences, could students receive the necessary preparation:[14]

> I believe that graduates of our best high schools and preparatories have as much general education as need be demanded . . . . However, only the courses offered by colleges of arts or sciences furnish the kind and grade of instruction which is requisite for an understanding of portions of modern medical curriculum; therefore, at least a part of a college course must be required for entrance to the medical college.

As the movement gained momentum, there was increasing concern as to how these years of required college education would be used. The scientists were not to have it all their way. When it became clear that the 1-year requirement established by the Association of American Medical Colleges in 1910 was merely a bridge to a 2-year requirement, the more humanistically oriented medical educators pressed with renewed verve for recognition of the value of nonscientific courses in the education of a doctor.

In his 1910 *Report*, Abraham Flexner stated clearly that the 2-year requirement would not only provide preparation in the basic sciences but would also open the door to nontechnical studies:

> The requirement is, therefore, necessarily a college requirement, covering two years, because three laboratory courses cannot be carried through in a briefer period—a fortunate circumstance since it favors the student's simultaneous development along other and more general lines.[24, p. 26]

Other medical educators were even more outspoken in their advocacy of nontechnical studies in the premedical period. In his presidential address before the Association of American Medical Colleges in 1910, Dr. George Hoxie recommended that if the 1- or 2-year requirement were approved by the Association, the time gained should be devoted to the humanities:[31]

> I would urge, therefore, that when we have the opportunity to advise prospective medical students as to their preliminary studies, we advise them to secure a good broad foundation of general culture rather than a narrow and technical scientific training. I would urge that the preliminary college years now being added to our courses be directed toward making men rather than artisans—that the languages, philosophy and the arts be given a proportionate place in their curriculum.

In retrospect, it is clear that an essential element in the effort to raise standards in medical education during the period from 1880 to 1920 was the establishment and extension, to 2 collegiate years, of the premedical requirement. Although the objectives of the new program initially were heavily weighted in the direction of the sciences, by the end of the second decade of the twentieth century, the place of nonscientific courses had become an emergent issue. It would be incorrect to say that the humanities, the arts, and the social sciences had gained a sizable position in the premedical curriculum; but they did have a foothold.

IV. The Revolt Against Science and Specialization, 1920-1940

Even as the battle for the establishment of the 2-year premedical curriculum came to a close, new

voices were raised in protest against the narrowness and inflexibility of the medical and premedical curricula. These early voices were the precursors of a full-blown revolt against the ossifying effect of externally fixed curricula heavily weighted with narrowly conceived science requirements. By 1940, the medical schools and the liberal arts colleges had won at least a measure of the autonomy which was denied them during the drive for standards in the early part of the century. They had used this autonomy to develop programs more evenly balanced between liberal and technical studies. However, the issue of science specialization versus liberal education was by no means resolved. As recently as 1955, a member of the admissions committee of the Harvard Medical School lamented that, "When medical schools proclaim (to the liberal arts colleges) their belief in a broad liberal education as the best preparation for medical school, they are met with a very resistant attitude."[25]

If there was indeed a revolt in the twenties and thirties against the over-emphasis on science and specialization, it is appropriate to examine the situation upon which it focused. Putting aside the medical school curriculum for the moment, we may direct our attention to the premedical program in 1919. In that year, the Constitution of the Association of American Medical Colleges committed member institutions to require at least 60 semester hours of collegiate level work—over half of which was to be prescribed in the areas of chemistry (12 hours), physics (6 hours), biology (6 or 8 hours), and English composition or literature (6 hours). Additional courses in foreign languages, comparative anatomy, psychology, and social science were recommended in such a way that no conscientious premedical student would fail to include them in his program.[7]

A random survey of medical school admissions requirements for the year 1920 suggests that few schools were content with the A.A.M.C. minimum. The Stanford University School of Medicine prescribed 50 of the 60 hours.[46] The University of Cincinnati College of Medicine prescribed 44 hours of the premedical preparation of its students and "recommended" an additional 8 hours in vertebrate embryology and quantitative chemistry.[12] The announcements of other medical schools during this period suggest that the practices of Stanford and Cincinnati were typical. It is not surprising that these same announcements contain few statements concerning the values of a liberal education in the preparation of physicians. Thus, shortly after the 2-year premedical requirement was established, it was functioning as a heavily prescribed, professionalized introduction to the study of medicine.

The Nature of the Revolt

This situation was not destined to continue long unchallenged. In fact, at the very time the 2-year requirement was going into effect, a professor of anatomy at the Medical College of South Carolina expressed concern over excessive prescription in the premedical program:[40]

> Now, there is one serious objection to prescription in relation to preliminary preparation to the study of medicine, and it is this: Medicine is a specialization in the field of knowledge; . . . Now, the whole trend and tendency of specialization, in medicine or in any other profession or business, is toward . . . intellectual obliviousness to all except the special purpose for which the special education was had and for which the profession or business exists.

In view of this, he recommended that the preliminary education of the physician be devoted to ". . . the study of everything else than that which one will study specifically in medical school."[40]

Writing in 1920, Dr. William Braisted, Surgeon General of the United States Navy, took a position which suggested that the apotheosis of the pure sciences was coming to an end:[4]

> In enumerating these so-called scientific features of premedical education, it is important to remember that a slightly greater familiarity with them prior to matriculating in medicine will not compensate for the dwarfing effect of a course restricted to them and unbalanced by studies of a complementary character . . .

One of the best statements of the reaction against excessive prescription and specialization came in 1925 from Dr. Hugh Cabot, Dean of the University of Michigan Medical School and President of the Association of American Medical Colleges:[10]

> The theory, though, as I think not the practice of the premedical requirement was that it should supply some of the requirements of a broader education and some of the necessities of a scientific background. But in our eagerness to be sure that science was not too far in the background, we have set down so many requirements in the period as to occupy at least half of the total . . . We thus in effect deny any substantial belief in the importance of the fields of economics, philosophy and history . . . It would appear to be a fair assumption from the results of our present policy that we do not in fact believe that broad educational requirements are important in the training of a physician.

Viewed in perspective, Dr. Cabot's concern for the premedical curriculum was part of a larger problem. The volume and diversity of regulatory influences which impinged on medical education was on the increase. Unwilling to accept or enforce further regulations until some basic guide lines had been set up, the medical colleges decided to sponsor a broad spectrum study of medical education in the United States and Canada—the first since Dr. Flexner's 1910 Report. In 1925, the Commission on Medical Education was established as an independent agency.

The final report of the Commission —issued in 1932—touched repeatedly on the theme that the medical schools and liberal arts colleges must enjoy the flexibility necessary to keep their programs up to date with the latest developments in scientific and educational thought. The Commission's conclusions regarding premedical education confirmed the views of those who, 10 years earlier, started the revolt against excessive prescription of scientific subjects in the premedical curriculum:[13]

> Premedical education should be general, not preprofessional education. A sound general training is of more value as a preparation for the study of medicine than a narrow, technical training limited largely to the premedical sciences.
>
> If the premedical period is intended for the purpose of general education, it should be permitted to serve these purposes. The tendency of medical schools and regulatory bodies to define in detail the amount and character of premedical education is contrary to the spirit of real education, the unit of which is the student, not the courses or the curriculum.

It is difficult to assess the effect of these efforts to release premedical education from its narrow professionalism. At first glance, there appear to have been few concrete results. With some exceptions, medical schools today are observing the same minimum admissions requirements in science as they did in 1920. Yet there has been one important change. In the twenties, the minimum requirements consumed half or more of the

2-year curriculum. Today, with the 4-year program all but prerequisite, the minimum requirements generally constitute less than a third of the total program. Perhaps the real significance of the reaction against excessive prescription lay in its function as a deterrent to the addition of essentially professional courses to the preliminary curriculum. Today, at least, the premedical student who seeks a liberal education has a fighting chance.

The campaign against science specialization and prescription was by no means confined to the premedical program. The medical schools, too, were subjected to the critical scrutiny of thoughtful educators and practitioners.

By the early twenties many were convinced that the effort to raise standards had reached a point of diminishing returns. The chairman of the Association of American Medical Colleges' Committee on Curriculum asserted in his 1922 report that higher standards in the medical schools had been obtained at a price:[9]

> That a high degree of rigidity of requirements has resulted is obvious, and it is, perhaps, impossible to achieve an elevation of standards by any other method, but this rigidity has become serious and should receive careful consideration with a view to determining whether or not it can properly be mitigated without relaxation of the high standards obtained.

During these years, the tide of reaction ran high. A substantial amount of intellectual and, at time, emotional energy was directed against German scientific ideals which, prior to World War I, had played a major part in the drive to raise standards. Writing in 1923, Dr. Charles Emerson, Dean of the Indiana University School of Medicine, criticized American medical educators for their emulation of the narrow German approach to the clinical aspects of medicine. Describing the German method, he said:[19]

> They studied medicine in the animal in preference to man. They substituted the laboratories of experimental medicine with their dogs, guinea-pigs, and rabbits for the clinic. In the laboratory, they said, if we learn the truth concerning human beings, why grope darkly at the bedside?

Emerson went on to urge that the American medical schools free themselves from the domination of the experimental laboratory and adopt a more liberal view of the practice of medicine which would focus broadly on the whole patient and the society in which he lives.

These early statements of dissatisfaction with medical education as it had developed under the spellbinding faith in science and specialization, were the seeds from which grew the liberalizing reforms of the past 30 years. Nowhere in the literature is there a clearer intimation of the changes to come than in an article by Dr. Robert Wilson, Jr., of Charleston, South Carolina:[53]

> The living human being is not reducible to physical and chemical reactions; he is a psychological being as well, and is the product of long and complex heredity modified by his peculiar social environment, an understanding of which fact is essential not only to the proper handling of patients, but to the comprehension of the social and economic bearings of pathological conditions.

Arguments for Liberal Education

A study of the medical education literature of the twenties and thirties reveals that the arguments for liberal education fall into several categories. They are discussed here within the framework of three groupings—those having to do with the status of the profession, with professional compe-

tence, and with personal competence.

The status of the profession.—Like most professions, medicine has long been concerned with improving its status. Reformers in medical education have tended to support their arguments with the contention that their proposals would elevate the status of individual practitioners or the profession in general. So it was with the advocates of liberal education. They insisted that the profession should nurture its newly won prestige by educating men who were not only scientists, but also men of culture.

In 1929, Dr. Stuart Graves implied that certain nontechnical studies contributed directly to the physician's ability to assume a status position in the community:[26]

> A physician should be a leader in his community. To be a leader, he must be an educated man. As never before in history, the doctor must understand the social relationship of man to man, the psychology which governs society, the history of human endeavor, the literature which contains scientific records, the natural sciences which lead to the great complex science of modern medicine, with its emphasis upon preventive medicine and public health.

More recently, Dr. Earl McGrath emphasized the function of liberal education as a means of assuring the parity of medicine with other learned professions:[35]

> If, however, the doctor is to continue to occupy a position of importance in American society, quite aside from his services in the prevention and cure of disease, he should have a broad liberal education comparable to that of his college classmates who enter other professions and positions of leadership in the world of business and industry . . .

These statements clearly reflect the conviction among practitioners and teachers that liberal education could play a vital part in elevating the status of the medical profession. Beyond this, such statements make it clear that medicine for these men was no longer a narrow, scientific discipline which could find prestige only in deeper specialization and greater triumphs in the laboratory. For them, it was a broad occupation which ramified to every corner of the human personality and human society. Their vision of the profession was large; their expectations of those who entered it were great. ". . . (the college) also sees to it that they have a breadth of intellectual interest, an extent of horizon that distinguishes the big man from the little one."[30] These men who perceived so clearly the relationship between liberal education and the status of the profession were in the main stream of the revolt against science and specialization.

Professional competence.—Many supporters of liberal education maintained that there was a clear relationship between the quality of a man's nontechnical education and his skill as a medical practitioner. This was not a new argument. Throughout the history of American medical education there have been those who insisted that the practice of medicine must be more than the application of scientific principles.

However, the arguments in recent years have had a different quality. Implicit in them is an awareness of the new scientific competence with which practitioners have been endowed. This new competence was to be maximized and given direction through an alliance with liberal education. As one medical dean put it, "The problems of medicine, on the whole, are quite as likely to require sound judgment based upon a knowledge of history, sociology, philosophy, and psychology as on the facts of science."[8]

In a very thoughtful article, Dr. Willard Rappleye discussed "general education" in terms of the qualities it might produce in the prospective doctor. He mentioned the capacity "to make accurate observations, draw proper conclusions, and . . . to exercise a critical judgment on values." —and then pointed to the relationships between these qualities and professional competence:[42]

> These are evidences of self-education which must be self-starting and self-propelling. They lead to resourcefulness and to independent thinking so necessary for the doctor as he meets an emergency of medical practice which may mean a difference between life and death of a patient.

Medical students themselves have voiced their conviction that liberal education contributes to professional competence. In a study of the attitudes of medical students, one respondent suggested that:[51]

> The student should come to medical school with an understanding of the philosophies of man, of his psychology, of the economic laws which govern the world in which he lives. We feel that this information will aid the future physician in understanding the men on whom he is to practice, as well as to make the physician himself a well-rounded individual and perhaps a happier man.

In 1941, the official voice of the American medical schools published a brief but significant statement which alluded to the comprehensive nature of contemporary medical practice. It suggested that the best way to prepare students for competence in such practice was to assure them of a preliminary education which emphasized general rather than specialized studies:[41]

> Recognizing the widening public, cultural, and educational interests, of medicine, the Association of American Medical Colleges . . . advises its member institutions and the colleges sending students to schools of medicine, that, . . . the collegiate preparation of medical students above the necessary prerequisites to the medical curriculum in biology, chemistry and physics, as defined by each medical school, (sic) the further educational development of prospective medical students be directed by the same viewpoints as guide the development of any other college student; the intent of this suggestion being to promote the general education of the medical student rather than his education along a specific or preprofessional directive.

Personal competence

Another concatenation of arguments for liberal education centered on the personal competence of the doctor. Liberal studies could develop such essential qualities as the ability to reason soundly, to study independently, to think critically, and to understand others.

The liberal outlook of the Commission on Medical Education came to bear on the matter of personal growth and development. In its chapter on premedical education the Commission said:[18]

> If premedical education is to be in fact a general education, the medical schools should co-operate to avoid prescribing that training in such a way as to prevent the development of intellectual self reliance and broad cultural interests in the student, a lack of which is so conspicuous in medical students at present.

It is significant, indeed, that the ranks of liberal education advocates are peopled so heavily by medical school teachers and administrators. Apparently, in the case of medical men, at least, the very process of specialization has served to sharpen their perception of the values of liberal education. The words of Dr. Wilburt Davison, Dean and Professor of Pediatrics at the Duke University School of Medicine, illustrate this

contention. His interest in premedical education touched upon its contribution to the personal qualities of the individual:[15]

> The premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. . . . He should learn how to work independently, observe critically, to analyze and integrate, rather than simply store the information presented. The choice of studies, beyond those required for admission, should be governed by his own chief interests and by the intellectual stimulus to be derived from the work. His major interests may be in any field, scientific or otherwise, and should provide an opportunity for the demonstration of his real ability.

Needless to say, the personal competence of prospective doctors was not exclusively a concern of the liberal arts colleges. The medical schools, too, perceived the necessity of adjusting their programs to maximize the personal competence of their students.

As early as 1922, Dr. A. C. Eycleshymer of the University of Illinois Medical School recommended changes in the medical curriculum which were designed to achieve many of the same objectives attributed to the liberal arts colleges. He suggested that students be allowed greater freedom of choice within the curriculum—that the student, not a fixed body of knowledge, be the object of medical education:[22]

> Education is the bringing out of something from within; not the forcing of something in from without . . . it is this something within the personality, the essential self, the individual which must receive greater consideration in our schools . . .

The foregoing discussion emphasizes that medical educators, in their advocacy of liberal education, have been motivated by such factors as an increasing interest in the student as an individual, a ripening awareness of the social responsibilities of the profession, and a growing appreciation of the importance of non-scientific disciplines in achieving the new broad objectives of the profession. Their definition of liberal education reached far beyond the boundaries of liberal arts subject matter. For them, the real test of a liberally educated man was his performance—in the profession and in private life.

V. The Contemporary Scene

Premedical Education

At first thought, it may seem that there is little to add to what we have said about the status of the premedical program in the total pattern of medical education. The preceding pages indicate that, during the second and third decades of this century, much effort was directed toward establishing liberal premedical studies as a precondition to enrollment in medical school. Some of the recent literature suggests that this ideal operates in the liberal arts colleges with varying degrees of effectiveness. For example, in their highly significant study, *Preparation for Medical Education in the Liberal Arts Colleges*, Severinghaus, Carman, and Cadbury make this point concerning premedical studies in the 114 participating colleges:[45, p. 68]

> The program taken by the average premedical student in at least twenty-five of the institutions participating in the Study does not represent a fair example of a liberal education, and in about thirty others it is only barely adequate.

Elsewhere, the same authors conclude that the ideals of liberal education are only occasionally understood and espoused by premedical students:[45, p. 9]

> The Committee was impressed by the extent to which narrow voca-

> tionalism dominated the minds of many students in our colleges of liberal arts. These students have little or no conception of the meaning of liberal education; they have come to college to prepare themselves to earn a living.

In spite of these discouraging statements, the Severinghaus report is not pessimistic concerning the future of liberal education. As far as the authors are concerned, the desirability of liberal education for physicians is a foregone conclusion. Unlike the writers of the 1932 report of the Commission on Medical Education, they do not feel the need to argue the case for liberal education at great length. Instead, the emphasis in their study is on the methodology of liberal education. Their chapter headings reveal a concern for such aspects of the liberal arts college program, as, The Advisory System, Liaison Between College and Medical School, A Balanced Education, Majors and the Culminating Year, Some Ventures in College Education, The Teacher and His Methods, and Influences Outside the Classroom. The authors imply that their most important function is not to argue in behalf of liberal education, but rather to produce recommendations for the improvement of the premedical program.[45, p. 1]

Severinghaus' emphasis on the *how* instead of the *whether* of liberal education typifies a new theme which has entered the literature of medical education in the past few years. In a criticism of the premedical program, Dr. Alan Gregg of the Rockefeller Foundation was concerned less with the *values* of liberal education than with the *methods*. He referred particularly to the quality of teaching in the liberal arts colleges:[37]

> Young instructors in many a university are not young instructors at all—they are young graduate students whose abilities as teachers receive neither trial nor cultivation. They are intent on publication and "productive scholarship" and freshmen and sophomores are the worse for our dishonesty of thinking such persons able instructors.

Dr. Gregg went on to recommend that preprofessional programs be taught by men and women capable of imparting breadth to their teaching.

Criticism of the methods of liberal arts education came from outside the profession as well. A professor of philosophy at Yale implied that excessive specialization in the liberal arts curriculum made it difficult to tell from a student's transcript whether or not his education had been liberal:[28]

> It is not enough merely to specify that so much work be done in the social studies and in the so-called humanities, because these disciplines are also highly specialized today and because many courses in these subjects are of little or of no use to premedical students.

He said, further, that such courses should be judged according to the approach and the basic outlook of the professor—and according to their contribution to the development of real maturity and the capacity for responsible value judgments.

This new concern for the methodology of liberal education is a logical development from earlier efforts to establish the claims of liberal education in the premedical program. Now that this first step has been achieved, some medical educators have begun to feel that they may appropriately act as critics of the premedical program—that their vision of the liberally educated person is clear enough to be worthy of attention in the liberal arts colleges.

Medical Education

Underlying the whole of this dis-

cussion is the assumption that the ideals of liberal education may be operative not only in the liberal arts college, but also in the school of medicine.

Comprehensive medicine.—In recent years, writers have continued to point to the importance of liberal values in medical education. Increasingly, they have used the terms "social" and "comprehensive" medicine to describe medical education and practice which have been liberated from the narrow confines of lecture room and laboratory.

Dean George Berry of the Harvard Medical School has been a fluent spokesman for comprehensive medicine. In 1953, he wrote:[2]

> Scientific medicine has hitherto been weakest in relation to the patient's affective life and his social environment. The behavioral sciences are already helping the doctor to rely less on intuition and more on systematized knowledge as he approaches these facets of the patient. Not to make use of them so far as they are useable would seem to be unscientific. Can scientific medicine be anything less than comprehensive?

Other medical educators who had begun to view the profession through a wide-angle lens were quick to point to the advantages enjoyed by medical schools located in large university communities. Why not support the expanded objectives of social medicine by drawing upon the nonmedical faculties of the university?[48]

The most important single source of information on the teaching of social medicine is *Widening Horizons in Medical Education*, a book by the Joint Committee of the Association of American Medical Colleges and the American Association of Medical Social Workers. Published in 1948, it was the fruit of more than 7 years of work. The study outlines the history of social and environmental medicine in America, states principles to govern the teaching of it, and illustrates the application of these principles. According to the Committee:[32]

> There are three major features of illness—physical, emotional, and social. These are so intimately interwoven in the pattern of diseases that they must be considered together, rather than as separate entities. All three must be included in the curriculum if medical education is to provide the student with the knowledge and skills necessary to fulfill the aims of medicine.

It follows that medical students must learn to recognize and evaluate social and emotional factors as an essential part of the process of diagnosis and treatment.

These present-day attempts to understand the *milieu exterieur* of patients are part of a long-term effort to find the proper balance between the physical, psychological, and social factors in medicine. Such efforts to develop balanced relationships among the various elements of professional practice are of the essence of liberal professional education.

The foregoing are essentially statements of theories or convictions concerning what modern medical education should be. Fortunately, the medical schools have not confined themselves to issuing statements of intent. The fact is that today's medical schools have displayed a refreshing predisposition to act upon their convictions regarding liberal education.

Preceptorship programs.—One example of this tendency toward action is the growth of preceptorship programs. Such programs reflect the desire of medical educators to free students from a narrowly circumscribed view of medical practice. The idea is not new. Its roots go back to the early years of American medical

education when it was usual for an aspiring doctor to learn the profession by taking up residence with an established physician.

During the past 5 years there has been an accelerating interest in preceptorship programs. Of course, as Wiggins points out, the movement is by no means universal.[52] Yet, many medical colleges today do offer such experiences as a means of correlating the theory and the art of medicine.

The liberalizing effect of the preceptorship is well illustrated by the statement of a doctor participating in the University of Vermont program:[54]

> The major objective of a preceptorship plan is to learn the so-called art of medicine in all its ramifications. This includes . . . acquiring an understanding of the doctor's role among the families and communities with which he is linked, the economics and social circumstances of the population as they affect their medical needs and a host of other intangibles which relate to the proper practice of medicine.

Curricular coordination.—Medical educators have acted in another way to liberalize the curriculum. Since the end of the Second World War there has been substantial interest in the problem of coordination among the various medical disciplines. The reasons for this interest are not hard to trace. The pressures of proliferating scientific knowledge had forced the curriculum into a compartmentalized pattern in which specialization was dominant. Students were expected to absorb fragments of knowledge and somehow assemble them into an organized medical education.

The advocates of coordination sought to break down the walls between departments; they saw a functional relationship between clinical and preclinical studies; and they insisted that courses in the two areas should be taught with emphasis on their relatedness. Dean Davison of the Duke University School of Medicine put it this way:[18]

> The most important objective is a close integration of the entire medical course into a single unit of education rather than a series of more or less isolated subjects. . . . Every effort should be made to emphasize the close relationship of (clinical to) preclinical subjects and to impress the students from the first with their interdependence.

A number of medical schools have developed programs designed to achieve coordination among subjects.[2] In so doing they have turned away from the idea of training undergraduate specialists. Instead, they are seeking to prepare good general physicians who are capable of practicing according to the ideals of comprehensive medicine.[20]

Integration of medical and premedical studies.—Another recent development which carries implications for liberal education is the integrated plan of medical education. The word "integrated" is used occasionally to describe the curricular changes discussed above under the rubric of coordination. The term as used here refers to a far more sweeping kind of curricular re-orientation which combines premedical and medical studies in a single continuous instructional sequence.

Today, a number of medical colleges have integrated programs which are either in operation or in the advanced stages of planning. One is inclined to ask why such a trend has developed. The planners of the new Johns Hopkins program provide some clues. They believe

[2] Programs at the University of Virginia, Western Reserve, Harvard, and the University of California at Los Angeles are noteworthy examples.

that their plan will ameliorate three major deficiencies of present programs:

> (1) The accepted number of years required to train a physician, (2) the dichotomy which exists between the liberal arts and the medical sciences, and (3) the noticeable decline of strength which has recently developed in the basic science departments of medical schools.[3]

The second point is obviously of special significance for those interested in liberal education. Surely a curricular pattern which provided an interdigitation of professional and nonprofessional subjects throughout the whole period of higher education would be liberalizing. Such a pattern should enable the student to use his nontechnical education more efficiently in mastering technical problems—both in medical school and, later, in practice. However, there is one caveat. The objectives of liberal education reach far beyond professional competence. There is at least a possibility that the administrators of integrated medical programs will lose sight of this fact—that they will value essentially nonprofessional courses according to the degree of their orientation to medical problems. If such a tendency were fully realized, the integrated programs would produce physicians with liberal professional educations, but whose nonprofessional educations were seriously underdeveloped. Such a change would be in opposition to the ideal, documented in this paper, that the best doctor must be far more than a skillful practitioner. It is not too much to say that this recognition of the values of nonprofessional liberal education accounts in large measure for the preeminent position of medicine among the professions. Whether or not this ideal is preserved may well depend on how carefully the planners of tomorrow's integrated programs guard the integrity of nonprofessional courses.

[3] "A Revised Program of Medical Education in the Johns Hopkins University." Johns Hopkins Magazine, June 1957, Vol. 8, No. 9. Reprinted, J. M. Educ., March 1958. Vol. 33, No. 3.

Summary

Throughout the history of medicine in America, the strength and prestige of the profession have been closely correlated with the liberality of the educational programs offered to aspiring physicians. In colonial times such broadly educated men as John Morgan and William Shippen brought high prestige to the profession. Later, during the years of the great westward movement, most doctors did not feel they could afford the "luxury" of liberal education; and so, they met the immediate needs of a young nation and neglected the important but more deferrable ideals of liberal education. It was during these years that the profession of medicine reached its nadir.

With the revolution in the biological sciences at the end of the nineteenth century came new effectiveness in treating human illness; but these gains were not really maximized until medical and premedical education had been liberated from excessive emphasis on science and specialization.

Unless all signs fail, we are now experiencing another scientific revolution—this time with the focus on the physical sciences. The lesson of history is clear; again there is a choice to make between the immediate goals of technical skill and the deferred goals of liberal education. The pressure of present-ray scientific needs is great. It will take clear vision and monumental tenacity to maintain an optimum balance between technical and liberal studies.

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Current and Future Trends in Psychiatric Residency Training*

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HIGHLY ORGANIZED residency training programs in psychiatry and neurology are so numerous and commonplace today that it is difficult to realize that this is a development of the last 25 years (Charts 1-6). In 1929 there were 49 programs approved for training in nervous and mental diseases. The standards for approval were extremely flexible and required only a staff of properly qualified physicians, able management of the hospital, a pathologist, careful histories, one or more competent nurses, and regular staff conferences at least monthly or preferably weekly. Such hospitals were subject to inspection by the American Medical Association to ascertain if they met these very tolerant standards. The number "49" is not informative, because 36 of these were state hospital programs, two were neurologic training programs, four were in homes for the mentally retarded, and three each were made up by universities and private sanitaria. The status of approval had little practical meaning, because it brought only the dignity of a listing

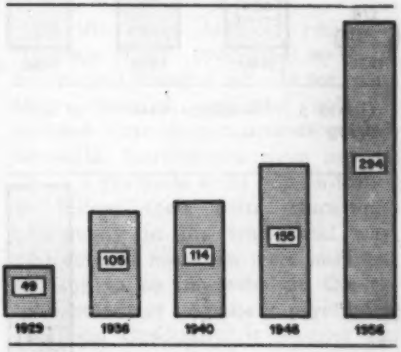

CHART 1.—*Number of psychiatric residency training programs.*

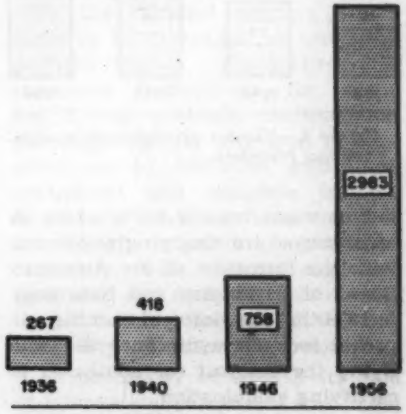

CHART 2.—*Number of residencies offered in psychiatry.*

*Presented at the meeting of the Southern Psychiatric Association, Miami Beach, Florida, October 7-9, 1937.

†The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

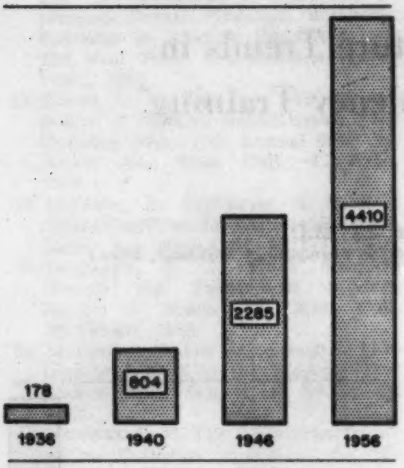

CHART 3.—*Cumulative numbers of certified psychiatrists.*

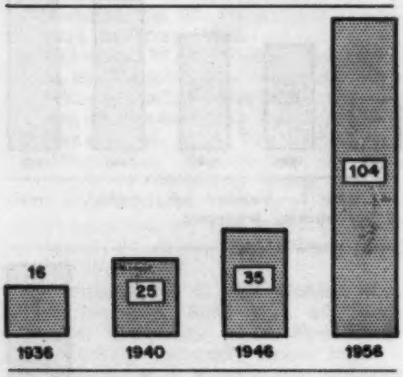

CHART 4.—*Number of neurologic residency training programs.*

but no other reward for working in an approved training program. It was with the formation of the American Board of Psychiatry and Neurology in 1934 that the status of training approval took on significance as qualifying the resident for admission to certifying examination.

In 1936 there were 105 psychiatric residency training programs accommodating 267 residents. These were listed under the heading of "Neuropsychiatry" because of the lack of full distinction between neurologic and psychiatric practice. There were only sixteen residency training programs in neurology, accommodating 48 residents, and practically all these

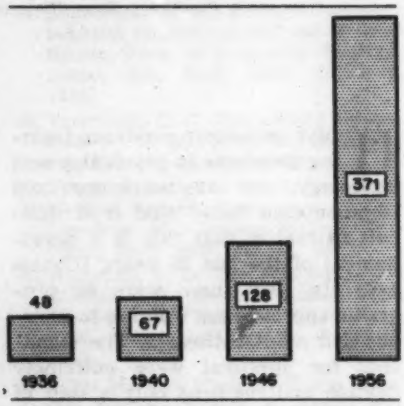

CHART 5.—*Number of residencies offered in neurology.*

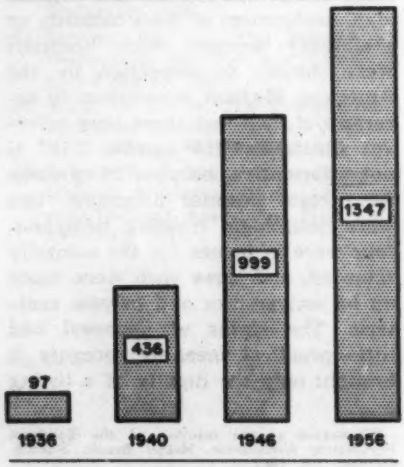

CHART 6.—*Cumulative number of certified neurologists.*

were on the Eastern seaboard, there being only eight residency positions in neurology west of Philadelphia.

The further development of psychiatric and neurologic residency training programs proceeded slowly until 1940, and the increment was small. World War II intervened, and at its end many young physicians became interested in the specialty of psychiatry and saw opportunity to gain training under government auspices. There was a large backlog of eager young physicians in 1946 who were anxious for approved residency training. Approved residency training programs increased sharply to 155, providing positions for 738 trainees. It was also at this time that the Veterans Administration became motivated to train in both specialties. In the period from 1946 to 1956 the great spurt of increase in approved training programs occurred, with the neurologic residency training programs increasing from 35 in 1946 to 104 in 1956, tripling the number of programs in 10 years. Psychiatric residency training programs increased from 155 to 294, the latter offering residency positions for 2,983 trainees.

Problems of Growth and Transition

The mere recording of the number of approved residency training programs in key years gives no real concept of the many problems arising or of the progressive changes that were molding the course of American psychiatric residency training. There was a shift in training from one type of hospital to another. Programs were arising for a brief life span under an enthusiastic hospital superintendent but later falling into oblivion, and various natural causes were operating to wither the training efforts of isolated hospitals. If one studies this year by year there appears to be a formless ferment, with programs sporadically and erratically appearing and disappearing, teaching experiments being undertaken, and various training affiliations being effected. Superficially, one gets the impression of old traditional education and pointless mutation churning about in an amorphous and chaotic fashion. Only when one takes the long view does it become apparent that a definite evolution was going on.

In the early days of residency training many programs were in homes and training schools for mentally retarded, epileptic colonies, isolated state hospitals, and private sanitaria. Universities were not set up on a graduate level but continued to follow their own educational philosophy in the traditional way, and general hospitals were only beginning to be interested in the establishment of in-patient psychiatric facilities. Gradually, it became apparent that isolated hospitals and those for specialized types of psychiatric problems were unable to offer the rounded training which came to be demanded by the prospective trainee. These programs continued ineffectively for years, but it was gradually realized that the only hope for any type of survival was by affiliation with more centralized and complete training facilities. Private sanitaria found it increasingly difficult to compete educationally with better organized programs, and many of them discontinued training because of the impossibility of attracting residents.

As psychiatry broadened its field of interest and practice, it was found that training programs must offer many diverse types of experiences.

It became necessary to provide acute and chronic case material, psychiatric problems arising in general medical and surgical settings, work in child psychiatry, ambulatory outpatient therapy of mild psychotics and psychoneurotics, work in basic and clinical neurology, and possibly even some type of elective work or research opportunity. As educational philosophy continued to develop along these lines, it became apparent that very few hospital centers could offer intramurally the varied types of training experiences required by modern standards. In order that their training programs might survive, groups of hospitals began to combine and affiliate so that each could offer some aspect of training that was not available at the other hospital. At first, many of these affiliations were on the basis of personal friendships or interlocking staffs but later changed into official amalgamations of programs, each contributing whatever it could. With these excellent facilities being offered, the smaller centers found it almost impossible to attract good residents.

With these natural forces already in operation, there came a marked acceleration due to the rise of three other areas of great training strength, namely, the university training center, the large general hospital with good psychiatric facilities, and the Veterans Administration with its entrance into psychiatric training. More universities began to secure full-time psychiatric departments and in-patient facilities. With their natural facilities for teaching basic medical sciences and all the associated specialties, they were the natural areas for the development of a complete and rounded training program. The facilities they could not supply, such as child psychiatry and chronic state hospital psychiatry, were secured by affiliation, and there occurred a regular and progressive rise in the number of complete, affiliated, university-training programs. Large general hospitals found themselves in the same position and organized their training efforts along the same lines. Finally, the Veterans Administration training programs were by their very nature an affiliated type of training enterprise, most of them being under Deans' Committees. These have accelerated the trend toward affiliated complete programs under unified educational direction. The smaller and isolated training units found survival difficult because of the high quality of training offered by these large affiliated centers. It would seem logical that this same trend will continue into the future with the formation of greater numbers of large centralized programs. The next step will be amalgamations which cut across state boundaries and permit pooling of the training resources of an area.

The apparent abundance of prospective psychiatric residents following World War II, plus various community needs and pressures, led to considerable expansion of psychiatric hospital facilities. It was assumed that this abundance of applicants for training would continue indefinitely. By 1950, however, the supply had dwindled alarmingly, and the Korean emergency was beginning to siphon off many who ordinarily would have taken such training. Areas of extensive expansion now found themselves in a desperate situation, having committed themselves by implication to the increased patient load, and being unable to get either experienced psychiatrists or residents to fulfill this service need. Desperation urged them to take several courses, some of which have only increased

the tempo of competition for trainees. The traditional method was to increase residents' salaries and outbid other training programs; some were in a difficult position, because their budgetary appropriations would not permit them to meet the competitive market. Others countered by making the residency training even more elaborate and providing more training opportunities and supervision, and opportunities for personal psychoanalysis. The financial condition of residents and the training opportunities offered to them were never at such a high level.

As competition for residents became even more keen, other devices and technics were utilized to attempt to solve the problem of staffing expanded facilities. Some hospitals began to use foreign medical graduates and exchange students in order to provide some type of medical care for their patients, and this problem will be discussed separately. Others increased the stipends of residents practically to the staff level by adopting career programs in which there were 2 years of obligated service within the hospital system. Others placed residents on the staff roster at regular staff salary but carried them as residents in order to keep the program alive and the patients supervised. Many medical centers then countered by making their training program still more elaborate, simultaneously securing grants from foundations or federal agencies and adding these to the regular residents' stipends, which again brought their salary scale somewhere near that offered by career programs. Where this educational and financial inflationary spiral will end cannot presently be foretold.

Foreign Medical Graduates

After the first flood of residents following World War II were accommodated, it soon became apparent that there was again a shortage of psychiatrists. In desperation many hospitals began to use foreign medical graduates in order that the patients would have medical care. In some areas these physicians were given staff stipends but presumably were carried in residency training status. This has brought about many problems, and the solution is not yet in sight. In some places nearly the entire residency staff is made up of foreign medical graduates, and this reaches an impressive number in some parts of the country. Serious problems in residency training occur on this basis, and this statement is not based on provincial prejudice or chauvinism. Although some of these foreign graduates are capable physicians, many have an inadequate basic medical education, and it is difficult to build a superstructure of specialized training on a basically weak medical foundation. The problem of language barriers and communication has posed serious difficulties in some programs, because there is actual difficulty in teaching and indoctrination. It is also true that some of these physicians are not motivated toward psychiatry nor would this be their choice of specialty, but it is based on the desperate necessity of making a living. Often they are completely unfamiliar with the culture from which their patients are derived, and this unfamiliarity makes it difficult for them to appreciate some of the more subtle nuances of the patients' problems. Often they find it difficult to establish a close interpersonal relationship with the patient and to do much more than a routine medical job.

By reason of the unapproved status of their medical school, often they cannot be licensed in any state of

the United States, and yet they will later present themselves before various state boards with proof that they have successfully completed at least 3 years of approved residency training. This has already posed a serious problem for many state boards of medical registration. The American Medical Association is presently attempting to cope with this situation by working out a program of certifying the basic medical education before undertaking residency training, thus guaranteeing that the basic medical education is reasonably adequate. This is not in lieu of licensure, nor does it give any privileges other than the opportunity for undertaking an approved residency. Whether these physicians, once trained, will be interested in remaining to care for the state hospital load, or whether they will find private practice more attractive, is another problem which only the future can answer.

Residency Programs and Psychoanalytic Training

The relationship between psychoanalytic training and residency programs has been a complicated one, solved differently in various areas and at different times, but still far from any stable settlement. The early rejection of psychoanalysis by the medical profession made it necessary for the analysts to form their own training institutes and organize their own curriculums. For a long time there was doubt in many quarters whether this was even a medical and psychiatric discipline, and this rejection made the older analysts suspicious of any affiliations lest these involve the subjugation or at least surrender of principles and control. Therefore, they have remained an independent and often isolated training group, but one which was usually working concurrently with the same group of young physicians who made up the roster of residency programs. Many serious problems have arisen, and serious consideration is now being given to effecting some compromises and solutions.[1-4]

There is no doubt that personal analysis and analytic training are currently very popular among the residents. There is no need here to explore the reasons for this popularity, but rather its effects. The concentration of training analysts in large cities has led to a greater popularity of metropolitan or suburban residency programs, and this has drawn residents from areas where training analysts are unavailable. This is another factor in promoting the dissolution of the smaller isolated programs. Some educational directors of residency programs, especially where the training staff is not connected with that of a nearby institute or where close personal friendships do not exist, have believed that a conflict of loyalties and interests exists. While some residency programs offer adequate time for personal analysis, others have given it grudgingly and resentfully, or have not permitted it during working hours. When considerable travel is involved, this may mean the loss of one or more residents for 3-5 half-days per week. Some educational directors encourage personal analysis; others derogate it or believe their own educational program is neglected because of the residents' primary commitment to the analytic institute.

Efforts to incorporate training analysis into residency programs have not been particularly fruitful to date. Even when there is a close

relationship with an institute, there still occur difficulties and dissension among the residents. Those not accepted for such special training may feel denigrated and suspect condescension on the part of their analytic colleagues, leading to morale problems. Residents in analysis may become seriously upset emotionally, and their training and function in a residency program may suffer severely. The case supervisor in a residency program may often suspect that the analytic resident is following the guidance of the analyst rather than his own directions, with consequent clashes and misunderstandings.

Probably most of these difficulties are due to old quarrels and misunderstandings, personality clashes, and stubborn adherence on both sides to traditional approaches and modes of thinking. Slowly, over the years, cooler heads are beginning to prevail, and the concept is emerging that there can be doctrinal differences without internecine guerilla warfare—and even that mutual cooperation and integration can occur without destroying analysis or eclectic approaches. The residency training programs have much to offer psychoanalytic institutes in the nature of case material, sound and constructive suggestions, and a basic medical foundation. Conversely, the institute can offer a vigorous dynamic and often inspiring approach to the patient and stimulating theoretical concepts for further investigation. Ultimately, each group will benefit wholesomely from an amalgamation of interests and approaches, once the ancient wariness and suspiciousness are overcome. Such integration is inevitable, but it is by no means around the corner; it will require much time, growth, tolerance and generosity, and the abandonment of traditional outworn shibboleths. Eventually, such rapprochement must and will be effected by new leaders both in psychoanalysis and in residency training programs.

The Role of the University Training Center

The majority of training programs have been organized in general or psychiatric hospitals for interesting historical reasons. In early 1937, questionnaires were sent to all medical schools to ascertain if they could offer the type of training the Board required. It was found that most of the colleges were not prepared for the teaching of postgraduate medicine, and generally there seemed to be little instruction in neurology or psychiatry as a postgraduate subject. Many colleges appealed to the new Board for directions on course material for consideration of the organization of such a program. There seemed to be little inclination to embark on a program of postgraduate education until the courses were specially outlined. At that time it was estimated that more than 20 per cent of medical schools had no facilities for the teaching of psychiatry or neurology. While some medical educators asked for a formal outline of course material, other medical educators waxed indignant that they should be told what to teach. Therefore, training programs were organized in hospital settings rather than on the medical school postgraduate level.

Generally, university authorities have maintained that education is something above and beyond mere training for a vocation. They have contended that education on the postgraduate level really consists of supervised work and original investigations in which the student more

or less teaches himself with the available facilities and that the more didactic methods have little place in such postgraduate training. They have opposed those concentrated didactic courses which had been organized for the successful completion of certifying examinations rather than to provide a broad base of knowledge in the fundamental medical sciences and investigative methods. In many instances, the university educational program has been linked with achieving a master's degree, and it was thus necessary for various associated subjects, such as ethnology, anthropology, and child psychology, to be studied. Often the universities have been quite inflexible in this matter, believing that significant educational principles are involved, and therefore have been unyielding in their outline of preparation for a master's degree. There has also been the problem of enrollment as a student in the graduate school and the paying of fees, which constituted a rather serious burden for some residents.

On the other hand, there are those psychiatric teachers who have been more concerned with practical considerations and who have been mainly interested in providing teaching more directly concerned with the immediate problems of patient care. They have felt that the trainee should now possess a sufficiently solid foundation in medical sciences so that he could proceed to more practical clinical matters. They have not been in sympathy with those courses which did not offer an immediate return in the sense of patient care and practical clinical knowledge. These programs have tended to cluster about hospital teaching centers without university affiliations, and they have been loathe to surrender either their autonomy or educational attitudes to the traditionalism of the graduate school authorities. Often they have wished only to obtain certain courses in basic science from the medical schools, and, failing to effect such arrangements, they have hired instructors to carry out a course according to their own wishes rather than one based on the broader university approach.

It is to be expected that universities will play an increasing role in such graduate education, because they have the background and facilities to carry out such functions. It cannot be denied, however, that many hospitals have developed a sound utilitarian program of education which they are reluctant to relinquish. Obviously, there will have to be a compromise somewhere, because this difference in educational philosophy has frequently kept the two types of training programs from uniting in a way that would utilize the best aspects of each.

University leadership and control are already established in Canada. The Royal College of Physicians and Surgeons of Canada withdrew training approval from the Provincial hospitals and recognized them only as a part of a university rotational scheme. Thus, the university psychiatric center provides the major portion of the basic and clinical training, sending residents to Provincial hospitals for experience with special and chronic types of patients. Current reports indicate that this is functioning well and elevating the standards of training.

Specialized Programs

Previously, programs offering 1 year of psychiatric training were geared to the needs of the beginner. They usually served as an introduc-

tion to psychiatry. Many of these have now been discontinued or have merged with large central programs, but in their place a new type of program is emerging. This is the 1-year program, usually on the 3d-year level, offering specialized training in psychiatric problems of general medical and surgical patients, ambulatory outpatient psychotherapy in a general hospital setting, intramural child psychiatry, or psychoanalytically oriented psychotherapy in private sanitaria. Usually, 2 years of previous training are required of residents, and considerable responsibility and sophistication are expected. Often these programs are attractive and rewarding to residents who have already determined their major area of interest or who find deficiencies in their first 2 years of training. It is expected that these programs will become more numerous and popular and will be a valuable addition to current training opportunities.

Methods, Content, and Duration of Training

Two general methods of arranging the training experiences are utilized, with vigorous supporters for each type. One may be termed the "block system," the resident being assigned successively for 3-6 months to single areas of training and presumably devoting all his time and energies to this field. This system has definite educational drawbacks. It tends to compartmentalize his experience and thinking, precluding broad clinical and scientific attitudes. Often, this method prohibits protracted observation of patients, making training a series of discontinuous clinical vignettes. Often, a particular type of experience may come too early or too late to be of maximal benefit. The intense preoccupation with that aspect of the person which is specified by the assignment narrows the clinical horizon of the resident. It is disheartening for the teacher to be called in consultation by a psychiatric resident on another clinical service to find that the trainee has neglected all the obvious emotional factors as he studies the medical or neurologic features avidly and exclusively.

The method of longitudinal and long-term contact with all aspects of the patient is more sound educationally. This emphasizes continued consideration of all aspects of the person, the acquisition and utilization of medical, neurologic, and psychiatric data and basic science correlations and their synthesis into an integrated picture of the total human being. Often it is difficult to organize and schedule such a program, and it may leave little time for routine service needs. The block system is easier and probably will enjoy support from those programs which lean heavily upon the resident for patient care.

The content of training is quite similar in most of the 3-year programs. Usually it consists of a 1st year of supervised in-patient assignment, followed by 3- to 6-month periods of service rotating through child psychiatry, psychiatric problems of general medical and surgical patients, ambulatory out-patient psychotherapy, basic and clinical neurology, experience with chronic conditions, and, frequently, an elective assignment. Completion of this series presumably produces a reasonably well-trained general psychiatrist. However, there are many areas of disagreement concerning the actual divisions within this general scheme. How much time should be

spent with major psychoses? Should child psychiatry be given early or late, and how much is the optimal amount in a 3-year program? Should out-patient experience be greater or less? How much long-term ambulatory psychotherapy should be included? Each program varies greatly within this broad educational framework according to the available facilities and the personal conviction of the educational director. This variation in emphasis is wholesome and leads to the richness of approaches and attitudes which is so necessary for the growth of psychiatry. The only educational conviction which enjoys universal acceptance is the bitter belief of all residents that they are receiving insufficient individual supervision.

The traditional length of training is 3 years, which amount fulfills Board requirements. No scientific evidence establishes this as the optimal incubation period, but it is derived from the practices of other specialties which in turn have arrived at this figure by some unknown process of divination. Into this arbitrary span are crammed the above basic and clinical experiences, creating a tightly packed schedule before any complicating factors are added. One of these factors is the effort of special groups—e.g., child psychiatry, to telescope their requirements into this period, reducing the clinical experience in other fields. Often residents request extra assignments to their personal field of interest—psychosomatic medicine, out-patient psychotherapy, etc.—with the result that experience in other areas is almost kaleidoscopic. All these factors may make the program a series of short, unrewarding and seemingly unrelated glimpses into various psychiatric settings. The wayfaring psychiatric program is currently faced with the realities of a time-limited Procrustean bed; either the program is too long, or the time too short. There appears to be evidence that a lengthening of programs is slowly gaining impetus. It is already established in some areas and consists of a basic and required first 2 years and considerable election and specialization in the second 2 years. It is probable that this trend will continue and that more residents will be attracted to these programs which fulfill both their needs and interests.

Conclusions

The following predictions appear to be justified by the current trends:

1. There will be a progressive decrease in the number of smaller, isolated general training programs due either to discontinuation or to amalgamation into nuclear complete programs.

2. Competition for residents will enforce improvement in training opportunities or stipends, or both. Eventually, those programs offering the best professional education will prevail, even though their salary scale is somewhat lower.

3. Programs less desirable educationally but determined to survive for reasons of prestige or local needs may attempt to meet competition by increased remuneration. This may be a temporary expedient, but the only permanent solution will be an improvement of training.

4. There will be an increase in the number of 1-year specialized programs.

5. The university medical centers will play an ever-increasing role in postgraduate education. Affiliation with such centers will become increasingly necessary and desirable.

6. Affiliations and interchange across state lines and organization by areas are a logical and necessary development.

7. A slow and cautious merger of psychoanalysis and residency training will finally be effected.

8. There will be an increasing trend of postgraduate training toward a truly educational endeavor, with decreasing dependence upon the resident for service needs.

9. The duration of residency training programs will gradually be increased.

10. Currently, there is a fairly well established and standard method of training psychiatric residents. The time is ripe for a revolutionary new idea and type of programming.

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Desarrollo de los programas de instrucción psiquiátrica para Residentes

En este trabajo (conferencia leída en Miami Beach, Oct. 1957, ante la *Southern Psychiatric Association*), el Dr. A. Boyd, Psiquiatra de la Mayo Clinic, de Rochester, traza el desarrollo de los programas de instrucción en Psiquiatría y Neurología para Residentes de Hospital, y discute los cambios que han tenido lugar en los métodos aplicados en dichos *training programs* durante las tres últimas décadas. Entre los factores que han influído, y aun influyen, en ese desarrollo, el autor analiza detenidamente el problema de la escasez de psiquiatras, la creación de los *Training Centers* universitarios, y la posición de la Psiquiatría tradicional con respecto al Psicoanálisis (que llevó a la organización independiente de centros de instrucción por las Sociedades Psicoanalíticas). También se describen una serie de programas especializados y se evaluan métodos, contenido y duración de la enseñanza psiquiátrica para Residentes. En sus conclusiones, el Dr. Boyd hace un pronóstico sobre las tendencias que se notarán en la educación psiquiátrica en un futuro próximo. Se puede esperar, en resumen, que la escasez de Residentes psiquiátricos traerá consigo las suspensión de *training programs* inferiores; y la competencia entre los hospitales por obtener Residentes calificados, llevará a una mejoría de las oportunidades ofrecidas a éstos. Crecerá la importancia del papel que desempeñarán los *Training Centers* universitarios en la educación psiquiátrica postgraduada, y también tendrá lugar una fusión, aunque lenta y cautelosa, con las organizaciones de instrucción psicoanalítica. La duración de los programas de enseñanza para Residentes será incrementada gradualmente.

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Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

Analysis of the Results Obtained with the Entrance Examination in the School of Medicine of the University of Chile

BENJAMIN VIEL, M.D.* and MARIANO REQUENA, M.D.
(School of Medicine, University of Chile, Santiago, Chile)

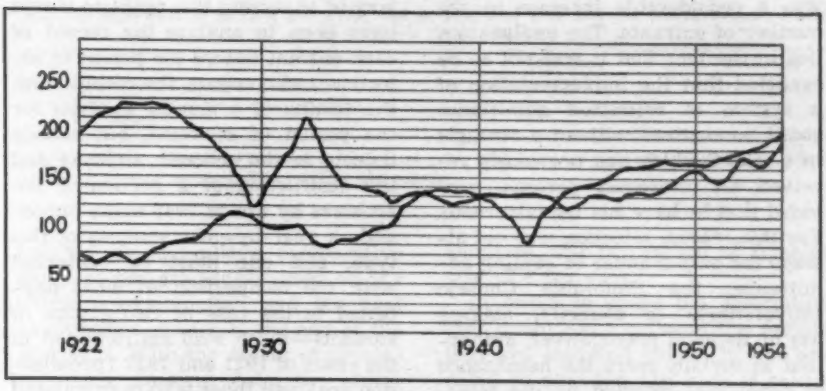
SINCE 1927, the school of medicine of the University of Chile has been looking for a method of selection of incoming medical students. Before the aforementioned date, all students holding the degree of Bachelor of Humanities had the right to matriculate as medical students, and the selection of the better ones was effected within the university, especially during the first 2 years, during which period a good portion of the new students were forced to withdraw owing to repeated academic shortcomings.

The system of free admission, operational from the founding of the school in 1842 until 1926 presented difficulties which are not hard to see. The most serious of these was undoubtedly the excessive number of students in the first-year classes which completely impeded practical instruction. Neither the teaching equipment nor the number of instructors was adequate for the teaching of an excessive number of students (who, rather than students, were mere attenders at dissertations upon biological problems, and only rarely was laboratory confirmation of these theories possible). The students, relatively unknown to the professors and steeped in theoretical knowledge but lacking in practical application of this knowledge, were subjected to final examinations, and only a few emerged successfully from them. These few passed on to advanced courses, while the others, who were in the majority, had to leave school after 2 or 3 years of fruitless endeavors, with the resulting loss of time, the wasted effort on the part of the teaching staff, and the loss of the money invested.

In 1927, having recognized that, in order to teach medicine, it is indispensible to have adequate laboratory facilities, a body of competent instructors and a group of students limited strictly by the capacity of the teaching facilities, the school of medicine limited the number of incoming students for first-year classes and established a selective examination. The country's need for doctors was not a consideration; the sole consideration was the capacity of the school of medicine; the capacity was determined by the size of the laboratories, the caliber of the teaching equipment, and the number and competence of the instructors. If the country needed more doctors than the school could produce, the solution of the problem lay in the crea-

*Director of the Medical School.

GRAPH I



Total number matriculated and total number of degrees 1922-54.

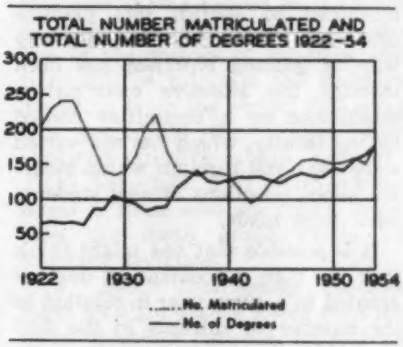
tion of other schools and not in the lowering of the quality of instruction.

The thesis maintained by the school of medicine during these years was not wrong, for soon there was created a new school of medicine within the University of Concepción, and shortly thereafter another in the Catholic University of Santiago. These new schools, which had also restricted admittance were, in the beginning, incomplete, since they had to send all their students to the University of Chile for advanced courses. However, beginning in 1953, these students had completed all their course work in their own schools, coming to the University of Chile only for their final examination and the awarding of their degrees, which is made only after 7 years of study.

Experience advises that this policy, should not be changed, and if it be proved that there is a shortage of doctors at present, it will only be an argument for the creation of another medical school but not for a return to the system of unlimited admission.

Chart 1 shows the number of incoming students (1st year) from 1922 until 1954, and also the number of degrees granted. For the purpose of reducing the severity of the curves, the graph shows the mean figure of 3-year intervals.

CHART 1



If one remembers that the selective system was inaugurated in 1927, the graph clearly shows that at present, with an ingress of only 75 per cent of that of 1925 (pre-selective period), there was granted in 1954, 2.8 times the number of degrees granted in 1925.

Also, the graph emphasizes the

fact that, in the years 1931-34, there was a considerable increase in the number of entrants. The explanation lies in the fact that it was not to be expected that the implementation of a system of restricted admittance could be realized without a struggle in a school which had previously received all interested persons, provided that he have his baccalaureate. For this reason, selection was not always the only manner of gaining admittance; the Honorable Consejo Universitario (a council), making use of its legal prerogatives, authorized in certain years the admittance of candidates rejected by the selective examination, and these authorizations of exceptions on occasions reached a considerable number. The unfortunate results of the majority of the candidates who matriculated without having passed the entrance examination, coupled with the protests which such a censurable system was bound to provoke, have combined to abolish this practice since 1951. Since this date, the only way of gaining entrance has been through the selective examination established by a committee named by the faculty, which has not varied since 1951 and through which medium seven selections of new students have been made.

It is possible that one might think that the high percentage of degrees granted in a given year in relation to the number of entrants in the first year of studies is not the proper way of analyzing the phenomenon, since, as has already been pointed out, the two other medical schools have been sending their students, to the University of Chile for advanced courses and to finish their studies there, and these entrants are not included in the graph, which considers only those entrants of the first year of the medical course. It is evident that the ideal way of analyzing this problem would have been to analyze the record of each entrant before the period of selection and compare the results with the results of a similar analysis for the period of selection, but certain defects in the school's archives and the destruction of a portion of the archives by fire in 1948 make impossible a year-by-year analysis of this type, and one must be contented with the comparison of what happened in the case of two groups of students—those who matriculated in the years of 1921 and 1922 (preselection era) and those who matriculated in 1948 and 1949 (selection era).

In accordance with these data, the percentage which graduates, if one considers the 36 who matriculated in 1948 and 1949 who are still in the last year as graduating, reaches 84 per cent in comparison with 49 per cent for the period 1921 and 1922. The difference is highly conclusive and is beyond the possibility of having occurred by chance.

Apparently, a contradiction exists between the graph in Chart 1, which shows a percentage of 100 per cent of degrees conferred in relation with the number matriculated, and Table 1, which shows only 84 per cent of those matriculating in 1948 and 1949 receiving degrees. However, one must remember that the graph does not take into consideration those students who entered the advanced courses after having done their preliminary studies in the other two medical schools of the country.

Since 1951, selection has been carried forward with more rigor and uniformity than before, and it is to be hoped that the 84 per cent will be improved upon in the future.

The natural desire to analyze the process of selection in greater detail

TABLE I

Students Matriculated in 1921 and 1922, and in 1948 and 1949 and the Proportion of Those Who Finished Their Studies.

	1921-1922	1948-1949
Total matriculation, 1st year	372	175
Total number of graduating students	182	112
Still studying	—	36*

**This whole group is at present in their last year, which makes one suppose that the whole group of 36 will successfully complete the course.*

has led us to make a comparative study of the grades obtained on the entrance examination and the final examination grades at the end of the first year. With the object of obtaining more uniform data, the aforementioned analysis was restricted to the years 1951-1955, inclusive, in which the selection was made by a single committee which acted with a uniform set of criteria.

The selection made between the years 1951 and 1955 took into consideration the antecedents of the candidates and the results of an admission examination taken in a single day by all the aspirants. The antecedents considered consisted in the total of the grades obtained on the examinations of the 4th, 5th, and 6th year of the humanities (secondary education) given to the committee by the Minister of Education and the grades obtained on the final exam for the bachelor's degree. The admission examination consisted of two parts, written, and anonymous (identifiable only by key), which were both taken in one morning and by all the aspirants at the same time.

The data which are analyzed below are based upon all the candidates for admission between the years 1951 and 1955, inclusive—which total 1933; and, of this number, only 625 were admitted to the first year of medical school. Of the candidates for admission, 21.8 per cent were of the feminine sex and, of those actually admitted, the percentage of females was 18.4 per cent.

In order to study the association that might exist between the factors that are analyzed below, it was decided to abandon the idea of calculating the coefficient of correlation, because of a summary analysis of the results indicated that, on various tests, there existed a strong tendency on the part of the correctors to give grades that were multiples of ten in the results of the admission exam and multiples of three in the results of the final exams at the end of the first year. It was desired, on the other hand, to calculate the mean in each one of the factors of selection and from this to calculate the standard deviation from the series. Following this procedure, the results were classified into five groups, namely:

(*a*) Very bad: This group is composed of those who got grades lower than the mean grade minus 1.5 standard deviation.

(*b*) Bad: This group contains those who got grades lower than the mean of values between 0.5 and 1.5 standard deviation.

(*c*) Regular: contains all those who got grades 0.5 standard deviation either above or below the mean.

(*d*) Good: contains those receiving grades above the mean with a standard deviation of 0.5 to 1.5.

(*e*) Very good: contains those who received grades above the mean,

with a standard deviation of more than 1.5.

Through the method described there were analyzed, first, the relations existing among the different components of the selection for admittance, and then those which might exist between each one of these components and the result of the first year of study.

One can conclude, from an analysis of the correlation between the different factors considered in the selection, that there is a high degree of association between the total of the grades received in the humanities and the results of the test for the baccalaureate, and also between the first part of the admission exam (section on general knowledge) and each of the two just mentioned. It is not strange that it should be thus, given the fact that the three tests just mentioned serve only to evaluate the knowledge acquired by the student. It seems strange, in a way, that such a high association as the one found on analyzing the relations between the aforementioned tests should be found on studying the association that exists between these tests and the second part of the entrance examination (section on comprehension). Does this mean that the examining committee, on judging the capacity of comprehension, erred and actually went back to questions on general knowledge? A review of the test shows that this is not so and that results tend to show that acquired knowledge and capacity of comprehension tend to be united in the same person.

Table 2 illustrates the position that those admitted held in each of the components of the selection test.

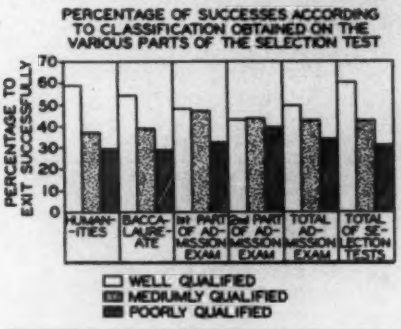
TABLE 2

Distribution of the 1993 Aspirants and the 625 Admitted to the School of Medicine between 1951 and 1955 According to the Classification Obtained in Each One of the Components of the Selection Test.

	Very Bad	Bad	Regular	Good	Very Good	Total
Humanities:						
Number of aspirants	48	595	799	263	288	1993
Number admitted	5	80	213	125	202	625
Percentage	10.4	13.4	26.6	47.6	70.5	31.3
Baccalaureate:						
Number of aspirants	162	289	672	613	257	1993
Number admitted	3	12	104	299	207	625
Percentage	1.6	4.1	15.6	48.6	81.0	31.3
First part of admission exam:						
Number of aspirants	105	629	687	459	113	1993
Number admitted	0	36	173	310	106	625
Percentage	0	5.7	25.2	67.5	93.8	31.3
Second part of admission exam:						
Number of aspirants	63	749	678	291	212	1993
Number admitted	0	36	181	211	197	625
Percentage	0	4.8	26.9	72.5	92.1	31.3
Total admission exam:						
Number of aspirants	77	588	732	443	151	1993
Number admitted	0	12	123	343	147	625
Percentage	0	2.0	16.8	77.4	97.1	31.3
Total selection:						
Number of aspirants	95	628	727	407	136	1993
Number admitted	1	6	88	394	136	625
Percentage	1.0	0.9	12.1	97.0	100	31.3

Since admission represents the total of the tests, one should not attach significance to the fact that individuals who figure in one of the tests with the classification "Bad" or even "Very Bad" be permitted to matriculate, since they may have compensated for this with better grades in other tests.

CHART 2



To clarify the results obtained in Table 3, Chart 2 is presented, in which is given the percentage of successes according to classification obtained on the various parts of the selection test.

As would be supposed, the group which had entered with grades of "Bad" or "Very Bad" turned out to be very small, which makes the predictability of the different components of the selection examination impossible with respect to the "Good" and the "Very Good." To obviate this difficulty, the deviation was then taken. This procedure permitted the distribution of observation in a more uniform manner and, consequently, a more detailed study than would have been possible by keeping the same distribution used for qualifying the aspirants.

On regrouping those admitted into the five indicated groups and studying the predictability of each one of the components of the selection test, together with the results of the grades on the final exam given at the end of the first year, we can construct Table 3, in which the group "Good" and "Very Good" on different tests was considered well qualified, and, by the same token, "Bad" and "Very Bad" was considered poorly qualified.

A mere glance at the graph shows that there is a good predictability in the various parts, and that success, on the basis of the four exams taken in December, is more frequent in those students who were previously well qualified on the

TABLE 3

Percentage of Successes Obtained According to the Qualification Obtained on Each of the Exams Included in the Selection Exam Passed by 574 between 1951 and 1955.

Test	No. well-qualified	Per cent of successes	No. reg. qualified	Per cent of successes	No. poorly qualified	Per cent of successes
Humanities	179	59.7	221	37.4	174	29.7
Baccalaureate	194	54.1	271	38.7	109	29.4
First part of admission exam	132	48.4	246	47.1	196	32.6
Second part of admission exam	174	43.3	201	43.7	199	39.7
Total admission exam	169	49.5	244	42.6	161	33.6
Total selection	150	60.7	225	42.5	199	30.6

various parts of the admission test. It is also evident that the predictability of the admission exam divided into its two components (Part 1 and Part 2) is below that of the other tests; but it improves substantially when the results are added and the joint predictability is found. If the sum of the two tests improve the predictability of each one, it might be regarded as a demonstration that the judgment improves with an increased number of tests, a fact which is confirmed on observing that the better predictability is obtained from the total of all the selection tests. The foregoing allows us to recommend that the final decision on the admission of a candidate be based upon the result of various tests; and therefore, since 1956, the selection committee has changed the manner of the exam by augmenting the number of questions and increasing the time of the admission exam from 1 day to 2, and modifying the technique of the comprehension exam by replacing the lecture by reading of a scientific work followed by an interrogation on the matter read.

It is necessary to note that, when one speaks of a percentage of successes of 60 per cent, this does not mean that the other 40 per cent have failed, since in this 40 per cent are included students who were held back in one or more of their exams and who can take the test again in 3 months, thus being advanced to the next course on the second chance.

The only true failure can be judged in terms of the number of students who are unable to pass any of the four exams on the first year work. Table 4 illustrates this phenomenon according to the grades of the entrance exams.

Chart 3 shows the percentage of failures according to the qualification on the various parts of the selection test and confirmed by the

CHART 3

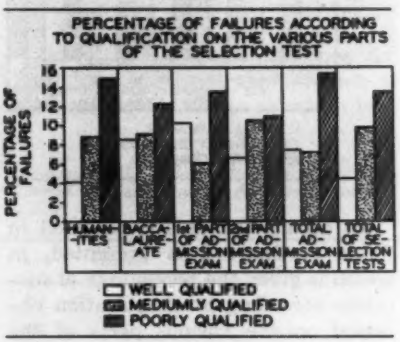


TABLE 4

Percentage of Failures Obtained According to the grades on each of the tests constituting the Selection Test of the 574 students admitted between 1951 and 1955.

Test	No. well-qualified	Per cent of failure	No. reg. qualified	Per cent of failure	No. poorly qualified	Per cent of failure
Humanities	179	3.9	221	8.6	174	15.5
Baccalaureate	194	8.2	271	8.8	109	11.9
First part of admission exam	132	9.9	246	5.7	196	13.2
Second part of admission exam	174	6.3	201	10.2	199	10.5
Total admission exam	169	7.1	244	6.9	161	14.9
Total selection	150	4.2	225	9.4	199	13.0

tion on the various parts of the se-

conclusions obtained by studying the successes, since failures are fewer as the students are better qualified on the admission test. The study also coincides with the greater predictability on the sum total of the selection tests in contrast to the predictability of any of the component tests.

If one considers the costs of studies for the first year and the amount of time and sacrifice that are invested in the selection examination, it becomes evident that the ideal would be to have 100 per cent successes among the students admitted, and the fact is that, of the 574 admitted, 53 (9.2 per cent) have failed in the first year; and this is evidence that the selection examination needs careful study designed to increase its efficiency in distinguishing the better students among the candidates for admission.

Two reforms have been proposed and accepted, and we hope to complete soon a study which will enable us to evaluate the effects of these two reforms. The first of the reforms was put into effect in the admission test of 1956 and consisted of the modification of the technique of the comprehension test, replacing the lecture which the student had to listen to and on which the student had to write a critical résumé, by a reading of a scientific work followed by a questionnaire based on the material just read. This new technique means that the subjectivity of the corrector has been reduced to a minimum. The second modification introduced (1957) consisted of augmenting the duration of the admission exam, which, rather than being completed in one morning during which period the student had to take the general knowledge test in addition to the comprehension test, was extended to two mornings, thus giving an entire morning to each of the tests. This modification permitted the increase of the number of questions, which has the advantage of increasing the discriminative quality of the test and decreasing the factor of chance which appears with greater frequency, the shorter the list of questions.

The continued tendency toward improvement of the quality of the exam has caused us to attempt various improvement measures, some of which have been tried in an experimental character without proper evaluation.

In 1955, the candidates for admission were submitted to the Raven Intelligence Test, and later to the Maudsley Medical questionnaire with the object of measuring the degree of their neuroticism.

This analysis shows that the Raven Intelligence Test has a positive degree of association with the grades obtained on the exams of the last 3 years of Humanities and with the grades for the Baccalaureate, although there are frequent exceptions. The correlation with the admissions exam are also on the positive order and are in general slightly higher than those with the grades of the last 3 years of the Humanities. Results of the test designed by the faculty of the medical school will be closer to those exhibited by the Raven test than the other two tests.

On studying the predictability of the Raven test, measured in the function of the grades obtained at the end of the first year of studies, it is seen to be nil and to raise several questions. Is one test sufficient to measure truly and objectively the intelligence of an individual? If the Raven test is a good measure of human intelligence, does the lack of predictability demonstrated in the analysis indicate that one need not

be intelligent for the first year courses of medical school? Is the demonstrated lack of predictability an indication that individuals lacking in intelligence can compensate for their lack of natural ability with increased effort?

Simple logic indicates that more than one intelligence test should be utilized and that the candidates should be submitted to a veritable battery of tests whose predictability has been studied over a span of years and not just in the face of a single year's study. A policy of this type, which seems to us to be the only honest one which can be followed in this respect, would require years of analysis before being recommended for use in selective tests for students.

The possibility that, for the study of medicine, intelligence which can be measured by the Raven test is not necessary or that, lacking this intelligence, one can compensate for it by doubling his effort obliges us to keep under observation all the students admitted in 1955 until they have completed their studies, and then to make an analysis of the problem after having repeated the Raven test with them so as to allow for any change in the mentality in the students.

For the moment, and while other evidence is lacking, it seems apparent that one cannot recommend the Raven Intelligence test to be used in the selection of aspirants for admission to the school of medicine.

In the opinion of W. M. Millar, the success obtained in English aviation, with regard to the selection of future aviators by using aptitude, tests constitutes a challenge to the medical schools which should initiate special investigations for studying the efficiency of these methods through the results of students in the course of study and, later, in the exercise of their professions.

In Chile there is no study either complete or in progress for investigating that which can be styled the doctor's "professio-gram," which, through various specially prepared tests, can reveal the existence of basic conditions the study of which are required by both the medical school and later by professional practice. Given the accumulated experience of foreigners in this matter, it seems likely that this is a rich field of investigation and that the departments of psychology should include this in their studies.

If time proves that the use of a special battery of tests, designed and destined to measure intelligence, aptitude, and personality, could constitute a kind of selective machine which would make useless the work of selection committees and would give to the medical schools only candidates of the best caliber with respect to intelligence, vocation, and morality, it would mean that the ideal method of selection has been found; but unfortunately, in medicine, the use of such batteries of tests does not seem possible of achievement, ever. We all know that intelligence can be considered something of a mosaic and that some components may be more developed than others, making it very difficult to obtain average values which are really representative. We know also that the aptitudes or partial intelligences which are required for the exercise of different medical specialties are different and that the aptitudes for being a radiologist are quite distinct from those required for being a surgeon or a laboratory technician. We also know that intelligence is not a stable phenomenon and changes in

the course of life in such a way that the greater the number of years that have passed, the worse is the prognostication based upon the results of the test.

Owing to these considerations, and until better criteria, it would seem advisable that the selection test not include an intelligence test and that all usage of special tests be made strictly experimental.

As far as Maudsley Medical questionnaire (destined to measure the degree of neuroticism) goes, the accumulated experience is conclusive. No relation whatsoever was shown to exist between the neuroticism thus measured and the results of the various parts of the selection test, with the exception of the second part of the admission exam, which, since it is the only association encountered and since it is quite low, we believe to be lacking in significance.

The predictability of the Maudsley test measured in the function of the number of exams passed the first year also turns out meaningless, and, therefore, we believe that one can conclude that, if the degree of neuroticism of the candidates is to be investigated with the object of following their behavior through the years, one should choose a better and more sensible test than the questionnaire used, which lacks in absolute value.

One might conclude, with a degree of logic, that a high degree of neuroticism should not be appropriate for medical studies or the exercise of the profession; but from the accumulated evidence, it does not even seem clear that the Maudsley Medical questionnaire is really an index that enables one to measure the degree of neuroticism that might accompany medical studies.

The personal interview, employed as the basic element of the system in most universities in the United States but which is not employed by us, does not seem to have a unanimity of consensus concerning its possibilities. A. A. Harris of the department of experimental psychology of the University of Cambridge expresses his criticism of the system and points out the short time limit of the interview (not more than 5 minutes each for a large number of the aspirants), and the nervous and unnatural attitude of the aspirant in an interview of this nature.

Summary

The restriction on matriculation and the selection of students for the first year of studies at the school of medicine of the University of Chile has had successful results which permit us at the moment to boast that 84 per cent of those matriculated received degrees, compared with 49 per cent for the period prior to selection.

The present means of selection, put in practice in 1951, permits us to conclude that the greater the number of tests administered to the aspirant, the better is the predictability of the selection. In other words, the mean qualification which the student obtains on the different tests to which he is submitted turns out better than the predictability of each of the separate tests.

Based on the last conclusion, the present selection committee of the school of medicine wants to improve the selection exam, augmenting the objectivity and the number of tests to which the candidates are subjected.

On studying the correlation which might exist between the results of the selection test and the Raven intelligence test, the conclusion has

been reached that, when positive, the degree of association is low. On studying the predictability of the Raven test, one concludes that it is nil.

The Maudsley neuroticism test also proved to be totally lacking in predictability as far as the performance of the students selected is concerned.

Since these conclusions refer only to the results of the students in the first year of studies, they must be considered as being provisional in character and may vary in the future, when the predictability of the selection tests is studied in relation to the grades obtained for the whole program.

Abstracts on Programs of Medical Education for Annual Meeting of the Association

The annual meeting of the Association of American Medical Colleges will be held at the New Ocean House, Swampscott, Massachusetts on October 13-15, 1958.

The Program Committee will welcome abstracts describing experiments and programs in medical education and in health services related to medical education. This may include premedical, medical, graduate and postgraduate education. It may include methods of education and of research in education. Since educational projects are inherently long term in nature, abstracts describing programs either projected or in progress will be considered.

The following regulations concerning abstracts and presentation of papers have been approved by the Program Committee and the Editorial Board of *The Journal of Medical Education:*

a) Three copies of the abstract are to be sent to the Chairman of the Program Committee: Dean Lowell T. Coggeshall, University of Chicago, Chicago 37, Ill.

b) The abstracts are required by July 15, 1958.

c) Abstracts should not be longer than 250 words: no tables or charts are to be included. The title of the paper should be followed by the names of the authors; their faculty rank, their university, insitute, or hospital and its location. Abstracts must be typewritten, double spaced on 8½ by 11 inch paper.

d) The time allowed for presentation of any paper will be ten minutes. Projectors will be provided for lantern slides 3¼ x 4 inches or 2 x 2 inches.

e) Acceptable abstracts will be published in *The Journal of Medical Education* at the time of meeting.

The formal paper will be considered for publication by the Editorial Board of *The Journal of Medical Education.*

Freshman Research Seminar: An Experiment in Elective Psychiatry*

SPENCER BAYLES, M.D.† and S. GOLDSTONE, PH.D‡
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WHAT SHALL BE taught in the preclinical years by departments of psychiatry? If and when agreement is achieved on this question, we must further deal with the problem: how should it be taught?

The responsibility for teaching psychiatry in the preclinical years may be said to date from the efforts of Ebaugh, Meyers, and others in the early 1930's.[2]

It has become apparent that psychiatry has preclinical requirements not included in the traditional basic science curriculum. The controversial and speculative nature of the behavioral sciences during the past century has limited their potential fruitfulness for students of medicine who focused their attention upon the technics and formulations of the physical and biologic sciences. Psychology and sociology were struggling in their infancy with the measurement and understanding of individual and group behavior, while psychoanalytic theories and therapies provided frames of reference for studying people, their emotions, interpersonal transactions, and psychopathologies. While the behavioral sciences experienced growing pains in their attempts to develop methods and concepts which were communicable and verifiable, psychoanalytically oriented theories of development, personality, and pathology were all that psychiatry offered in the way of basic science. The behavioral sciences on which psychiatry was dependent had not advanced to levels comparable with those of anatomy, physiology, biochemistry, and pharmacology.

The gradual refinement in the methods and theories of psychology, sociology, psychophysiology, and psychopharmacology has provided new subject matter for a basic science of behavior, and we are now witnessing the inevitable turmoil and controversy with regard to what is most fruitful and relevant for preclinical medical education. It is felt by many that emphasis upon laboratory experimentation and empirically determined information sacrifices warmth and ignores the individual and his feeling during the already dehumanized preclinical years. Others feel that experimental psychology, as well as an empirically based sociology and anthropology, provide

*Presented at the meeting of the American Psychiatric Association, Chicago, Illinois, May 1957.
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the long needed scientific respectability and framework for psychiatry.[6]

Controversy over "what to teach" is at its height. Unfortunately, the issues are somewhat clouded by different interpretations of the student and his motives. A frequently repeated notion which may derive from a psychoanalytic tradition, or from uncertainty on the part of the teacher in the face of new responsibilities, is that the new student is hostile and resistant to psychiatry and is perhaps not mature enough to incorporate concepts which direct toward human understanding.[5]

The present course in freshman psychiatry was undertaken with the basic assumption that beginning students were mature, critical individuals in search of information. It was felt that psychiatry should expose its behavioral science antecedents in a straightforward, undiluted fashion, including controversy with fact and progress with void. Emphasis was placed upon research and theory, providing the student with an account of experimental method and results, with none of the theoretical controversy removed. It was felt that the student should not be misled by a spoon-fed, dogmatic presentation of clearly controversial and speculative issues. A related factor determining the planning of the 1st-year course involves the scarcity of investigators entering psychiatry. Any method of correcting this must stimulate interest and curiosity about the unsolved problems basic to psychiatry.

The 30 lectures assigned to freshman psychiatry were organized around basic issues in the study of behavior. Learning theory, motivation, and perception, along with their supporting experimentation, were presented during the first quarter.

Method and Results

Spontaneously, after the sixth lecture, a group of thirteen students asked to take *the* psychiatry elective. Since no elective was available or planned, fast action was necessary to maintain the volunteers' enthusiasm. There was unanimous agreement on the desirability of a freshman elective in psychiatry, but again the question arose—"who shall teach them what?" Since the initiative had come from the students, the course had to be adapted to their needs. They indicated a desire to explore further the controversial issues raised in the lectures, with only one student apparently attempting to use the course as a method of obtaining help with personal problems. It was the attempt to meet interest in divergent areas of investigation and theory that led to the organization of a research seminar for freshmen.

Each student was assigned to a faculty member for individual supervision of the development of his research interest. The initial expectation was that each student plan and complete a small project or at least carry out a program of library exploration.

Although faculty assignments were made on the basis of expected congruence of interest, it was suspected that it was the enthusiasm of the faculty member for research and teaching which was most basic to the success of his student. The advisors' major responsibility was to direct the overabundant interest and enthusiasm toward a realistic research goal.

The students spent about an hour each week with their advisors dur-

ing a 5-month period, requiring an estimated total of 150 hours of instructor time.

The weekly seminars became the focal point of the elective. All members of the faculty of the department of psychiatry, as well as selected staff members from other basic science departments, were invited. The authors attended all seminars, and the faculty supervisor was usually available at his student's presentation. In general, four or five faculty members were present at each meeting, representing psychiatry, psychology, physiology, sociology, and pharmacology. Each seminar was scheduled for 2 hours and was continued at weekly intervals from January until the end of the school year.

When several students indicated interest in the same area, joint assignments were made. The students decided upon the division of labor and implemented the library, laboratory, and reporting obligations themselves. The meetings acquired all the characteristics of scientific discussions, including heated argument and critical comment. Ten in all were held, and projects were discussed as outlined in Table 1.

Laboratory research was accomplished in such areas as the perceptual and physiologic correlates of anxiety in pregnancy and the relationships between these factors and complications in delivery; the effects of dextro-amphetamine sulfate, secobarbital, and placebo upon objective measures of apparent duration; the effects of mescaline upon intelligence and aesthetic judgment; and the effects of phenothiazines upon frog pigmentation. Library research on behavior problems of children and adolescents, and the concept of identification in psychologic and sociologic theory were completed.

The discussion by the group helped to clarify vague concepts, pointed out unrealistic expectations, and in general encouraged the participants to carry their work further. Although the students were somewhat defensive at first, they soon got into the swing of things and seemed to appreciate the methodologic and theoretical battles that emerged from the discussions. We soon recognized that the participants were not afraid

TABLE 1
FRESHMAN RESEARCH SEMINARS
1956

DATE	SUBJECT	PRESENTED BY
Jan. 5	History of Psychiatry	Department chairman
Feb. 2	Progress Reports	All students
Mar. 15	Anxiety	Students A,B,C
Mar. 22	Phenothiazine and the Pituitary	Student D
Mar. 29	Emotional Problems of Children	Student E
April 5	Psychopharmacology of Pituli	Student F
April 12	Influence of Hallucinogens on values and Intelligence	Students G,H
April 19	Adolescent Behavior and Its Anomalies	Student I
April 26	Concept of Identification	Student J
May 10	Effect of Drug on Time Perception	Students E,K

of controversy and did not compare the problems of the behavior sciences with those of the other basic sciences in any unfavorable light. They accepted critical comments, cut their problems down to size, and in general performed like mature young scientists.

The role of faculty members in the seminars was threefold: They participated in the critical discussions as members of the group. When a student was presenting, his faculty advisor provided support and assisted him out of intellectual holes. When needed, faculty observers were sources of information, reference, suggestions for outside consultants, etc.

At the final meeting, with most of the faculty absent, student reaction to the elective was obtained. Although the response was generally favorable, there were several critical comments. It was felt that the elective seminars should begin sooner, emphasizing faculty participation at first in order to permit the student to become more familiar with the subject matter of the basic sciences of psychology, sociology, and psychophysiology with reference to their relevance to clinical psychiatry. The students indicated interest in departmental research programs and hoped for more exposure to the sociological aspects of behavior.

Ambivalent attitudes regarding "authoritative" answers were revealed in a request for more lectures and reading assignments, coupled with the complaint that, while student statements were freely criticized, "the professor has to be respected." A general criticism was that a student could not afford to invest a major time commitment to a project in psychiatry unless he could be assured the project would be acceptable to the department of physiology as meeting their requirement of a freshman research project.[1] Although each request for approval was granted, there remained uneasiness regarding which department to attempt to please. (Eight of the thirteen projects were so accepted by physiology.)

The interest of some students persisted beyond the period of the elective. Two students continued their study of the sense of time with a field trip to study the time sense of Navajo Indian children, and one student has continued with part-time work in the psychopharmacology laboratory. This summer, as they finish their sophomore year, two of the original group have again requested and received summer research positions in the department.

The second year of this program has closely paralleled the first. The schedule of seminars is seen in Table 2. Projects this year have included an attempt to lower the recognition threshold by hypnotically induced alteration of the time sense; a study of the effect of skin temperature changes on the GSR; investigation of the influence of a painful stimulus on cats' free choice of milk with added chlorpromazine or alcohol; measurement of the influence of hypnotically induced regression on memory; and a library study of "post partum psychosis." Student participation and involvement continues. Informal observation and inquiry indicate that the students are spending an average of 6 hours each week on these projects. Interest is evidenced by requests for summer research positions by six of the seven active students. Five of these requests could be granted.

[1]In the 1957-58 academic year, all freshman students will be required to complete a research project which can be in any department doing 1st-year teaching.

TABLE 2
FRESHMEN RESEARCH SEMINARS
1957

DATE	SUBJECT	PRESENTED BY
Feb. 6	Progress Reports	All students
Mar. 13	Perception of Brief Stimuli under Hypnosis	Students L,M
Mar. 20	Free Choice of psychopharmacologic Agents by Animals under Stress	Student N
Mar. 27	Effect of Skin Temperature on GSR	Student O
April 10	Learning under Hypnotic Time Distortion	Student P
April 17		
April 24	Post Partum Psychosis	Students Q,R
May 1	Sedative Choice (progress report)	Student N
May 8	Final Summaries	All Students

DISCUSSION

We are completing the second year of experience with an experiment in elective psychiatry for 1st-year medical students. In essence, the elective consists of an opportunity to originate, develop, and execute a laboratory or library investigation under the supervision of faculty members and to participate in a research seminar with other students similarly engaged.

We have been impressed by the students' acceptance of the behavioral sciences as areas for the investment of time and interest. It is our impression that this experiment emphasizes three points: first, from the medical students' point of view, that the nontraditional basic sciences of behavior have a definite place during the preclinical medical education; second, that interest and participation in behavior science research can be developed in an atmosphere of inquiry and faculty enthusiasm; and third, that the research seminar, which has so long been an essential component of graduate education in all other scientific fields, has a place in undergraduate psychiatric education.

We agree with Villee[5] on the benefits of a seminar in developing experience in speaking and in defending hypotheses. We would emphasize to a greater degree the importance of exposure to a wider range of topics than his own area of investigation would permit. We would add the importance of the opportunity and obligation to participate in critical discussion of ideas and investigations.

Research projects as teaching devices are used in physiology,[7] pathology,[4] and pharmacology,[1, 3] and from our experience seem equally applicable in the behavioral sciences.

On the basis of our current experience, we would like to argue for an investigative orientation to preclinical psychiatric teaching and for early exposure to the scientific antecedents of clinical psychiatry.

It is our plan to maintain the personal contacts established with the students, informally, and, when possible, in specific programs. In time it may be possible to achieve a program in psychiatry and the behavioral sciences somewhat akin to the Harvard program for student re-

search.[8] It is essential to keep in mind our goal of promoting the growth of the inquiring spirit in the student. It may be no more than a statement of faith to assert that the stimulation and cultivation of his own interests will be the greatest hope for his growth as a potential investigator. Whether or not this procedure increases the quality and quantity of graduate students in psychiatry remains for the future to decide. We intend to follow the careers of these students in an attempt to ascertain the long-term effects of such a program. Meanwhile, we shall continue to be guided by Whitehead's words: "The students are alive and the purpose of education is to stimulate and guide their self development."[9]

CONCLUSIONS:

1. A significant number of freshmen medical students are interested in the subject matter of psychiatry as an area of intellectual activity and scientific investigation, as evidenced by their voluntary commitment of free time to this program.

2. The interest of students in research is made manifest and encouraged by the opportunity for extended personal contact with behavioral scientists.

3. Freshman medical students are capable of independent thought and seminar participation as graduate students.

4. The apparent success of these first 2 years encourages us to urge this technique as a potentially fruitful means for meeting a most desperate need, i.e., the shortage of research workers in psychiatry.

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Métodos de enseñanza psiquiátrica durante el período pre-clínico

Ya hace más de 20 años que, gracias a los esfuerzos de Ebaugh, Meyers y otros, se ha reconocido, generalmente, la utilidad de incluir alguna enseñanza de Psiquiatría en el curriculum pre-clínico (véase F. G. Ebaugh, "The History of Psychiatric Education in the United States," en *Am. J. Psychiat.* 100:151-160, April 1944). Pero aun continúa la controversia sobre cuáles materias deben enseñarse y cuáles han de ser los métodos de instrucción. Además, aun hay que combatir una serie de prejuicios que oscurecen los problemas reales, como, por ejemplo, la idea de que los estudiante novicios sienten hostilidad y resistencia hacia todo lo que se relaciona con la Psiquiatría, y que no poseen madurez bastante para asimilar ciertos conceptos. Los doctores Bayles y Goldstone, del Colegio Médico de *Baylor University*, ofrecen en este trabajo (conferencia leída en Chicago, en Mayo 1957, ante la *American Psychiatric Association*) un informe sobre los esfuerzos que se están realizando en la mencionada Escuela para despertar el interés de los estudiantes de primer año por los problemas psiquiátricos, y para encontrar métodos adecuados de instrucción. Un curso de 30 conferencias sobre problemas básicos de teoría e investigación, y sobre métodos experimentales de la Ciencia Psiquiá-

trica y de *Behavior*, en las que no se eludían los puntos de controversia, despertó el deseo de un gran número de los participantes a explorar más detenidamente una serie de problemas, y condujo a la organización de un seminario de investigación para estudiantes novicios *(freshmen)*. Ese experimento, ahora en su segundo año de existencia, consiste esencialmente en ofrecer a los nuevos estudiantes, sobre base voluntaria, la oportunidad de iniciar, desarrollar y acabar, con ayuda de un profesor consejero, algún proyecto de investigación (en la Biblioteca o en el Laboratorio) relacionado con la Psiquiatría o las *Sciences of Behavior*. El seminario se convirtió en un centro de discusiones científicas, entre profesores y estudiantes, sobre dichas investigaciones y los problemas que suscitan. En sus conclusiones, los autores destacan los puntos siguientes: Un número considerable de estudiantes de primer año están interesados en cuestiones de Psiquiatría, y consideran ésta campo propicio de actividad intelectual e investigación científica; ese interés se saca a luz y se estimula cuando se ofrece a los estudiantes la oportunidad de establecer un contacto personal con profesores de Psiquiatría y de las Ciencias de *Behavior;* los estudiantes novicios son tan capaces de tener un pensamiento independiente y de llevar a cabo investigaciones y discutir en seminarios como los estudiantes graduados. Los buenos resultados que dieron los dos años de enseñanza experimental justifican, en la opinión de los autores, recomendar los métodos aplicados en su Escuela como un medio más para remediar la escasez de investigadores en el campo de la Psiquiatría.

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Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un mínimum de 25 lectores.

Dean George A. Bennett
1904—1958

Dr. George A. Bennett, Dean of Jefferson Medical College, died on February 27, 1958, following a heart attack. He had been attending medical education meetings in Chicago.

Dr. Bennett had served as dean of Jefferson Medical College since 1950.

He was born in 1904 in Water Valley, Miss. and graduated from Wabash College, a Phi Beta Kappa honor student.

Five years were spent at the University of Munich, where he studied Philosophy and Medicine, qualifying in Medicine in 1928.

In July 1930, he was appointed professor of histology and embryology at Georgetown Medical School. Two years later he was appointed professor of anatomy and acting head of the department of Anatomy at Georgetown and in 1934 became Head of the department.

He was appointed to the faculty of the department of anatomy at The Jefferson Medical College. He was made professor of anatomy and director of the Daniel Baugh Institute of Anatomy June 1, 1948, and in 1950 the Board of Trustees appointed him dean of the Medical School.

He is survived by his wife, the former Mary Hennen, and their four small sons, George Allen, Jr., Thomas Bowen, James Christopher, and John Paul.

In this Association, Dean Bennett was a member of the Committee on Veterans Administration Medical School relationships and representative of the American Council on Education.

The association extends its sympathy to Mrs. Bennett, their children and the faculty of Jefferson Medical College.

Biostatistics Instruction in Medical Schools

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A STUDY OF THE methods of scientific research variously called biometry, biostatistics, quantitative analysis, medical mathematics, etc., is among the newer disciplines gaining a secure place in the medical school curriculum. In 1952, a survey of activities in this area was made by the Committee on Training in Medical and Public Health Statistics of the American Public Health Association.[2] In view of continued interest shown in the November, 1956, meetings of the Association of Teachers of Preventive Medicine,[1] a follow-up survey was undertaken in the spring of 1957. Current information was collected from 94 medical schools in the United States and Canada as shown on the following pages (Tables 1-5).**

Trends observed in this and the earlier survey were: (a) biostatistics is here to stay as an essential part of the medical school curriculum; *(b)* the schools are moving in the direction of separate departments or divisions of biostatistics manned by professional biostatisticians; *(c)* major emphasis is on appreciation of the methodological fundamentals of scientific methods of acquiring knowledge rather than on details of statistical techniques; *(d)* instruction is through lectures and workshops on the application of statistical methods to problems in all fields of medical science and practice, not exclusively to one area, such as public health; *(e)* at least 30 hours of course time is required for achievement of these minimum goals; *(f)* most of the schools offer statistics in the first 2 years as part of the basic science curriculum but feel a need for re-enforcement and extension of this knowledge through practical applications in the clinical years to such problems as evaluation of therapeutic results, clinical trials, etc.; *(g)* the widespread use of locally prepared syllabi reflects the fact that no single biostatistics textbook has as yet achieved general acceptance in medical schools.

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TABLE 1

TYPE OF OFFERING OF BIOSTATISTICS (NUMBER OF SCHOOLS)

	Responsible Instructor			
	Not primarily a statistician	Prof. statistician from outside	Full-time prof. school statistician	All
Mention only	1	0	0	1
Lectures in other courses	19	4	1	24
Course given by interdepartment committee	2	0	0	2
Course given by other department	20	9	18	47
Course given by biostatistics department	0	5	1	6
	42	18	20	80
No offering				14
			Total:	94

TABLE 2

YEAR IN WHICH BIOSTATISTICS IS OFFERED (NUMBER OF SCHOOLS)

First	35
Second	38
Third	1
Spread over 2 or more years	5
Not determined	1
Total:	80

Required: 78, Elective: 2.

TABLE 3

CLOCK HOURS OF BIOSTATISTICS (NUMBER OF SCHOOLS)

0	14
1-9	16
10-19	31
20-29	14
30-39	11
40-49	2
50+	3
Undetermined	3
Total:	94

Median 15.5
Minimum 0
Maximum 64

TABLE 4

Major Emphasis	(Number of Schools)
A—Appreciation of biostatistics as a general tool of scientific method	30
B—Applications in experimental sciences and medicine (small sample theory)	20
C—Applications in public health and vital statistics (large samples)	11
A and B	8
A and C	1
B and C	8
Undetermined and no offering	16
Total:	94

TABLE 5

Text Used or Recommended	(Number of Schools)
Syllabus	25
Hill *(Principles of Medical Statistics)*	17
Mainland *(Elementary Medical Statistics)*	9
Smillie *(Preventive Medicine and Public Health,* Ch. 2, 3)	5
Maxcy *(Preventive Medicine and Hygiene,* Ch. 44, 45)	4
Wallis and Roberts *(Statistics: A New Approach)*	3
Croxton *(Elementary Statistics with Applications in Medicine)*	2
Miscellaneous (one school each)	11
Undetermined and no offering	18
Total:	94

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**Complete tabulation of survey returns (printed) available from author on request.

Resistances to Learning

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THE INDIVIDUAL supervision of psychiatric residents in psychotherapeutic work with patients involves many difficulties. The Group for the Advancement of Psychiatry (GAP) Report No. 31 of March, 1955 *(Trends and Issues in Psychiatric Residency Programs)*, includes a general discussion of the place in the resident's training of individual supervision of his psychotherapeutic work with patients. Similar to the ideas of Milton Rosenbaum,[1] the report indicates the possible areas of supervision as patient-centered, process-or (doctor-patient) relationship-centered, and therapist-centered, with allusion to the inevitable overlap of these schematic foci in actual practice.

In an effort to learn more about the elements of supervision, we met weekly over a 4-month period to discuss and keep notes on the details of our supervisory work with six residents. Among the ideas about teaching which emerged from these discussions was that the student's personal defenses against anxiety may act as resistances to learning and constitute a force which must be taken into account in the training of psychiatric residents.

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ASSIGNMENTS

As a rule, in the outpatient department of the Langley Porter Clinic where our study was conducted, the director of the Outpatient Department assigns the residents cases which include a variety of clinical problems, outlines the responsibilities of trainee staff members, and meets with each resident once weekly to review his work. She emphasizes the necessity for residents to develop skill in abstracting and formulating case material and keeping accurate records. She is available at all times for any assistance the residents need with their work. In addition, she assigns each resident an individual consultant from the clinical staff for a weekly supervisory hour. The consultant's orientation is toward helping the resident learn to function as a psychotherapist, mainly through a detailed review of the consecutive therapeutic hours of one of the resident's patients over periods ranging from 6 months to 1 year or more.

Our study is thus based on discus-

sion of individual supervisory and consultation work with six residents, all of them seen weekly by the director (M.H.) and three each by the case consultants (D.A. and T.McC.) and, to some extent, on our other work with residents and their teachers. Some of the details about our experience with the problems of tutorial-type teaching may be of interest to beginning supervisors, and some of the generalizations have a broader application.

Teaching Techniques

Consultants sometimes take too much for granted at first and tend to assume that the residents have technical knowledge and know fundamentals of therapy which they do not know. The residents often go along with this to save face. For example, some residents do not know about such basic matters as how to open and close interviews and structure therapy, to say nothing of more advanced psychotherapeutic skills. We let the residents in our study know that we did not assume they were expert psychotherapists even though 5 of them were in their third year of training and one in his second. None of them had had previous experience in psychotherapy with out-patients, though all had worked individually with in-patients.

In the beginning, the consultant can get factual information about the resident's previous training and experience while establishing a working relationship with him. A consultant can further orient himself to the resident's level of understanding by observing how the resident behaves toward him as the consultant, what and how he reports about the patient, and what else he brings up in the supervisory hour. Incidental observations may be made of the resident's functioning—for example, his handling of a telephone call from a patient or other interruptions during the supervisory hour.

One of the most helpful of all teaching devices is the demonstration interview, once the consultant has gained some experience with it. In the meeting with the patient and the resident, the consultant can judge how accurately the resident has reported about the patient and also take the opportunity to demonstrate how he himself conducts an interview. Bearing in mind the gaps he has discovered in the resident's knowledge, he can use the demonstration interview to illustrate some of these points. By appropriate implications throughout the demonstration interview, the consultant makes clear to the resident and patient that they are capable of working together in a therapeutic relationship. At the same time, he lets the patient know that the resident is the doctor in the case and that the consultant is aligned with the resident. For example, at the beginning of the interview the consultant might say to the patient, "Dr. B. has asked me to see you with him. How do you feel about talking with me?" Some of the implications to the patient are that Dr. B. is in charge of the case, not just a front man for a behind-the-scenes senior therapist; and, further, that the consultant respects the individual privileges and responsibilities of the patient-therapist relationship. Near the end of the interview the consultant might respond to the patient's inquiry as to what he can expect of treatment somewhat as follows: "What you get out of your work with Dr. B. will depend partly on his skill in helping you to understand your problems and partly—perhaps

even more—on how much you want help and on how hard you can work at the matter of talking freely and frankly with him about whatever is on your mind. That is the way you can be of most help to him in helping you." There are obviously many structuring implications in the phrases about "working together," the doctor's "skill," "talking freely," etc. Thus, a frequent tendency for a patient to disparage the training status of the resident or play him and the consultant off against each other is nipped in the bud before it can become effective as a defense against therapeutic work.

Beyond these initial steps, no standard teaching technique is suitable for all residents. It is necessary to vary the work with the resident by taking into account his training, personal and professional maturity, and the amount of time available with him. As indicated, the consultant can shift attention from the patient to the process of interaction between patient and therapist, to the therapist himself, and to the therapist-supervisor relationship. Although consultants, as sometimes in therapy, may at times concentrate directly on interpreting the resident's defenses against learning, this cannot be done satisfactorily if time for working through is limited. Our focus is on helping the resident learn to collect, formulate, and understand case data and to use these data in the treatment of the patient. A resident's resistances, however, can repeatedly intrude themselves as hindrances to effective work with a patient or with the consultant and thus force a departure from this principle.

Types of Resistance

Resistances may be as obvious as failure to keep consultant appointments or as subtle as the unconscious distortion of reports of interviews. A resident is often reluctant to report what he says to the patient and prefers to report only what the patient says to him. Even after he begins to report what he says to the patient, the interaction may still remain unclear, and only later does it emerge that his report of his comments to the patient was incomplete or distorted. Some residents need merely to have their attention called to this difficulty, to overcome it; others require some discussion of the reasons for their reluctance and an explanation of the necessity for accurate study of the patient-therapist interaction. Such an explanation usually enables a resident to proceed, without uncovering the deeper, multiple conflicts involved in his resistance.

Certain other manifestations of resistances to learning on the part of the residents in our study were observed: for example, introducing questions about first one patient and then another when it had been agreed to discuss only a single patient's therapy; withholding information about what transpired during a patient interview; discussing vaguely a patient or a patient interview without open distortion or actual withholding of information; bringing up the most pertinent transaction in a patient interview at the end of the supervisory hour; and asking the consultant about theoretical questions or topics known to be of particular interest to the consultant.

The Need for Individual Attention

A few examples from our study illustrate the need for individual handling of residents' problems in

their early training in psychotherapy.

One conscientious, intellectual resident was unable to discuss or even report his own reactions to patients. When the consultant insisted on such a report, the resident would give an account of what he had said to the patient but would keep revising it according to the consultant's response, thus making it impossible to tell what he really had said. Under the guise of clinical interest the resident repeatedly requested discussion on the genesis of a certain type of emotional illness, and it became apparent that he had personal anxieties in connection with the particular illness. The consultant decided not to undertake discussion of the resident's anxiety-laden topic, since sufficient time was not available for both case consultation and psychotherapeutic working through. This resident worked most effectively with patients when the supervisory discussions were kept on a didactic level. His effectiveness further increased, however, when he later undertook psychotherapy for himself.

By contrast, another resident, equally intelligent, had difficulty in understanding and making therapeutic use of intellectual psychodynamic constructs. He could almost never refrain from using the consultative time to talk about his own personal emotional problems, even though he had already begun analytic therapy for himself. In a similar way he tended to personalize his relationships with his patients to an extreme degree. He overidentified himself with the patients and tried to use them to gratify his need for friendships; he therefore had difficulty in discriminating between the respective responsibilities of the patient, therapist, and consultant. For instance, he responded to a patient's tearful pressure for interviews outside the clinic hours by committing himself to an impractical schedule. Then, despite the repeated earlier discussions, in supervisory time, of the necessity for realistic limit-setting with patients, he took up the problem with the consultant with the air of expecting a magical solution. This resident's desire to have his patients like him and his personal need to effect a quick cure seriously hindered his ability to gather, understand, and use clinical data in his interaction with the patient, and to allow the patient sufficient time for working through old, deeply patterned conflicts.

This resident was receptive but covertly resistive to understanding technical matters in working with his consultant. He often misapplied the consultant's interpretations of the clinical data by responding to a patient's current interview as though it were the previous one. For example, a withdrawn but psychiatrically sophisticated schizophrenic patient one day asked whether the resident were interested in hearing about his dreams. The resident said, "Yes." In discussing the interview the consultant pointed out, on the basis of what was already known about the patient, that the patient was attempting to talk about what he thought would please the resident in order to form a close relationship. The consultant said that more important than to discuss dream material at this time was to help the patient in his reality testing and in some adjustments of his day-to-day living. In the next therapy hour the patient brought several sheets of recorded dreams, but the resident responded to the patient's attempts to talk about them by telling him not to talk about dreams but to talk

about what he had been doing in the past week. The patient reacted to this in a hurt manner. The consultant then pointed out that by such mechanical use of the earlier suggestion about reality testing, the resident had rejected the patient's efforts to follow-up on the last interview. The resident said that he now understood. However, at the next therapy hour, when the patient started to tell the resident what he had been doing in the previous several days, the resident asked him about his dreams. Such circumscribed misunderstanding, not at all consistent with the resident's high level of intelligence, clearly represented a resistance to learning.

This resident required careful, insistent questioning and discussion to clarify what actually happened between him and the patients. When the effort to clarify failed, the consultant resorted on several occasions to direct interpretation of the resident's resistance. For example, one day the resident avoided discussing a case that was not progressing satisfactorily by attempting to engage the consultant in a theoretical discussion of the psychodynamics of masochism. Finally, the consultant had to say to him, "For some reason you don't want to tell me about Mr. A's case."

Another resident showed such unusual aptitude in understanding psychodynamics and such facility for working with patients that he easily gratified the consultant. Even with him, however, specific resistances to learning were encountered. For instance, he came from a cultural group in which the giving of gifts was an expected part of any friendly relationship. One of his patients was an extremely manipulative, acting-out woman who had defeated herself and two previous therapists by subtly socializing the treatment relationship. He was at first astonished at the significance which the consultant attributed to the patient's giving the resident a small gift. Indeed, he was unwilling to consider the gift in any light but that of a friendly gesture. Finally, he came to understand the possible manipulative import of the gift-giving sufficiently well to bring the matter up for discussion with the patient and to work it through with her. He recognized later that a correct handling of the incident had been a turning point in bringing the case under control.

One resident had been seeing a disturbed young man who covered his mounting anxiety with a flippant, half-angry facade, and showed flight of ideas. For some time the resident had adopted a similar joking attitude with the patient, despite the consultant's repeated advice to the contrary. The consultant then interviewed the patient, with the resident observing, met the patient's flippancy with an attitude of serious interest, and brought the patient back to his anxious concern, hurriedly mentioned, about a recent sexual affair. In the next supervisory hour, the resident reported that he could now see how his jocular approach had blocked therapeutic movement. His later reports of interviews showed that his insight was genuine and that he had used it to enable the patient to discuss and understand his fears.

These examples illustrate the variation in dealing with learning resistances, according to the consultant's judgment of the residents' needs and to the amount of time at their disposal.

A negative attitude in a resident is not necessarily a resistance to learning. Conscious attitudes expressed in activities such as procrastination criticism of administrative

regulations, insistence that he cannot learn from a consultant, or truckling to authority may impede learning by affecting motivation. On the other hand, a negative attitude toward a consultant, expressed by a desire to out-do the consultant as a therapist, may add to the motivation for learning. Like these egosyntonic character traits, the resistance to learning stems from unconscious conflicts; but the resistance shows itself as a discrete symptom, such as failure to comprehend, when the defenses of the learner are challenged. In the case of psychiatric residents who are learning pyschotherapy by supervised clinical experience, the challenge to defenses may come from something in the case material, the patient-therapist relationship, or the therapist-consultant relationship.

One of the consultant's functions is to help the resident maintain an anxiety level compatible with learning. When the resident's defenses are so rigid as to interfere with psychiatric learning or so fragile as to impair seriously his functioning as a psychotherapist, therapy for himself should be recommended. In occasional cases temporary discontinuation of work with patients may be necessary; but only rarely, under present methods of trainee selection, must a resident be advised that he should work in some field other than psychiatry for protection to himself and to patients.

Resistances to learning, like resistances to abandoning old patterns of reaction of any kind, are obviously not specific to psychiatric residents. In reviewing our notes we saw evidence in ourselves of resistance to learning and also to teaching; for example, tendencies to stereotyped handling of typical questions, taking up theoretical matters, or dealing in some grand strategy rather than struggling with direct understanding of the individual case material presented by the residents. Less obvious was the trend, in our discussions, to go through several phases of learning comparable to those of the residents, who were reluctant to report their own participation in interviews. At first we tended to talk mainly about the residents—their ignorance, their reactions; later we got down to the patients' case material and the patient-resident interactions. Eventually, we saw much in our own reactions and interactions with the residents that we had not consciously intended to conceal. In our "twenty/twenty hindsight" we saw that we too, had had some anxiety about the teaching-learning processes that showed itself in a reluctance to reveal our own feelings and techniques to one another's scrutiny.

From these observations, perhaps we can generalize further. The limited scope of this paper precludes discussion of a number of important areas of application of the understanding of the defense against learning. One of the more obvious of these would be in the medical profession's dealing with malpractice problems arising with the suit-prone patient and the suit-prone physician. Another area would be in the misunderstanding of the possible accomplishments of mental health education.

The difficulty in helping general physicians learn to use or even accept the premises of pyschotherapy undoubtedly has one of its main roots in the phenomenon we refer to as resistance to learning. In case consultations on a medical service staffed with relatively young medical residents, one of us (D.A.) encountered resistances in the form of the physician's personal defenses against anxiety similar to those observed in our

psychiatric residents. Such resistances are unconscious and can be resolved only through clinical work under skilled psychiatric supervision or through individual pyschotherapy. Not many physicians are motivated for either of these experiences, and little can be accomplished through didactic methods. There are no shortcuts to understanding the pyschotherapeutic process. Furthermore, the psychiatric profession lacks enough skilled teachers at this time to direct much teaching time to the general medical profession.

However, the increasing emphasis in medical schools on providing supervised clinical work early in the medical curriculum and continuing it through the young physician's formative years offers the best chance of effecting an integration of basic psychological principles into future medical practice.

Conclusions

Our attention to the evidence of resistances to learning in psychiatric teaching of resident physicians, our observation of ways of dealing with them, including the working through of some of them, led us to conclude that, if no resistances are encountered, no learning will result which the resident could not have accomplished on his own without the consultant's help. A verbal facility and ability to memorize may pass temporarily for learning, but the integration of a clinical experience in psychotherapeutic work involves the recognition of and successful dealing with resistance to understanding.

Resistances to learning such as we have described are comparable to resistances of patients in psychotherapy. Though unconscious, they can be called to the attention of the learner in psychiatric training by a consultant, a supervisor, or the residents' own group discussions. The handling of resistances to learning is not wholly comparable to dealing with resistances encountered in psychotherapy; but the teacher does appraise the situation, the resident's personality, his degree of maturity and motivation, and the amount of time available for tutorial-type teaching before deciding how to help the resident profit most from his training in psychotherapy.

The principle of resistance to learning has broad application. The medical profession in general and medical teachers in particular need to be aware that personal defenses against anxiety in medical students and physicians influence what they can learn.

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Student Finances*

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IT HAS LONG been a policy of this School to disregard the financial status of applicants for admission and to admit them on a basis of scholastic standing, aptitude for medicine and so forth. There can be no question of the wisdom of this attitude from the viewpoint of principles of American democracy, but the adoption of it by corollary, opens us to some moral liability for helping the indigent student financially in his pursuit of a medical education. Our resources at present are too meagre to permit much direct assistance; most of our help has been in the form of finding work, outside scholarships and appealing to the generosity of the Alumni Association for assistance for these students. In order to put our financial help on a sounder footing and to build up our resources for scholarships and loans, it has been necessary for us to find out exactly what is the need of the student body. There is obviously a difference between what a person wants in the way of financial assistance and what he needs to cover his costs. To determine these facts we resorted to a questionnaire, distributed to all of the students, from which we hoped to obtain detailed information as to expenses and sources of income. This we compared with statistical data assembled by the Department of Labor and the United Community Services as to the average consumer expenditures in the Boston area and the minimum requirements of welfare recipients.

QUESTIONNAIRE ANALYSIS

The questionnaires were returned by 260 out of 277 students. Not all of the students answering, answered all of the questions; nor can all the answers be considered to be completely accurate. For example, it was easy to elicit definite answers as to how much was spent on rent, but sums listed as spent on recreation, supplies, and even food, must often be interpreted as estimates, because few accounts are kept. On the whole, the data is sufficiently complete to give us a fairly accurate picture of the financial position of our students.

Where there is sacrifice, where there is hardship and where there is dire need, is brought out pretty well by comparing our data with that collected by the Bureau of Labor Statistics in its pamphlet on consumer expenditures, incomes and savings, based on data collected in 1950, and the figures in the "Guide for Estimating the Minimum Family Budget" put out by the Nutrition Committee, Health Council of the United Community Services in 1955, based on current costs in greater Boston.

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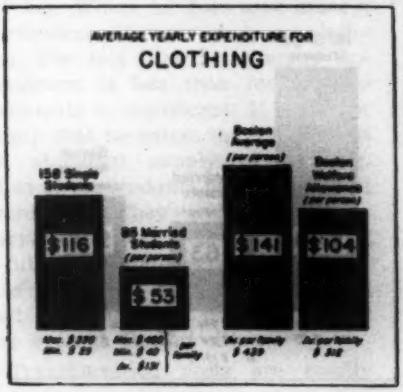
†Associate Dean.

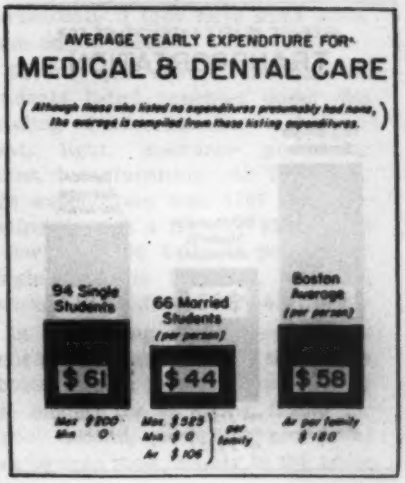
The first of these two surveys is based on material obtained from 262 families. The figures given are averages for families in this area. The family size is 3.1 individuals, compared with 2.4 for our married students (of whom we have 88 with a total of 34 children). Some of the material collected lends itself well to comparative analysis in graphic form. This means of presentation has been employed wherever possible in the accompanying tables, most of which are clear enough not to require reduplication of figures in the text.

BUSM Student Expenditures

These are divided into the following categories: tuition, food, rent, clothing, books and supplies, medical and dental care, transportation, recreation and miscellaneous. The last includes insurance premiums, taxes, dues, contributions, and in some instances utilities. The average yearly expenditure for married students was $3,634 including $1,000 tuition. For single students it was $2,784. The cost of the children averaged $556 a year. In studying these figures, it is obvious that two were not living as cheaply as one but still were spending considerably less per person on all living expenses. The average yearly expenditure per person for living expenses in the Boston area is $1,273. Our married students spend $1,098 and the single ones $1,784. Actually, because these figures often cover children of varying ages and varying cost, they do not mean much, except to show that the student expenditures are modest, to say the least. They are sufficient to provide the necessities of life but with little left over for emergencies. It should also be mentioned that three of the 170 single students support dependents, presumably adult. Breaking expenditures down into individual items, we begin to get a clearer picture of costs.

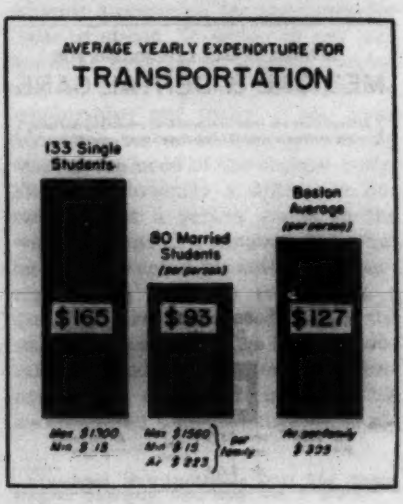
Eighty-five out of 88 married students have homes of their own and provide most, if not all, of their own food; only the rare invitation to dine out or a holiday at home changes the routine. They spend $7.30 per person per week for food, on an average, as compared with the average Boston family, which spends $7.69. Adult welfare recipients receive $5.35 for a male and $4.80 for

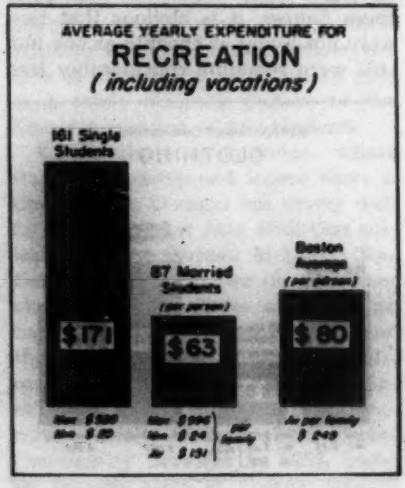



AVERAGE YEARLY EXPENDITURE FOR
MEDICAL & DENTAL CARE
(Although those who listed no expenditures presumably had none, the average is compiled from those listing expenditures.)
94 Single Students
$61
66 Married Students (per person)
$44
Boston Average (per person)
$58

a female working moderately hard. Nine of our married students are at this level, living on $5.00 per person or less. This seems to represent an unnecessary degree of personal sacrifice in order to live a normal adult life and still obtain a medical education. Some persons may consider so small an expenditure for food incredible but students can live on it with some ingenuity. Outdated bakery products, sales of canned goods (particularly items from little known producers) are used extensively. Meats are purchased very reasonably just before the Faneuil Hall market closes on Saturday night. Single students fare somewhat better; 18 per cent live at home, and 14 per cent receive their board in return for work. The remaining 68 per cent live on an average of $9.98 per person per week. As it costs a minimum of $2.00 a day or $14.00 a week to eat in restaurants in these parts, it is obvious that many stratagems are resorted to be even the average student, let alone those with very little money, to survive. These include cooking in their rooms, meals with friends and relatives, and so forth. Actually the eating habits of the single students are so varied that it is difficult to pinpoint the degree of hardship involved; but certainly it is easy to state that the average expenditure for food is very modest, and some of the students who spend less are probably living on inadequate diets.

Rent expenditures vary in the type of accommodation purchased according to the district in which the dwelling stands. For example, around the medical school, which is Boston's worst slum, a childless couple can spend $55.00 to $60.00 a month for a comfortable, small apartment, provided the wife does not mind the neighborhood and does not have to go out at night alone. Similar accommodations in unfashionable suburbs or on the back side of Beacon Hill cost from $60.00 to $65.00 a month and increase the cost of transportation. The average amount spent for rent per month by married couples, including those with children, is $65.00. No comparative data is furnished by the De-





partment of Labor or Community Services. There are 28 couples who live in poor accommodations, renting for less than $60.00, and 14 in bad ones renting for less than $50.00. The single students are better off. Thirty per cent live at home, 12 per cent are lodged where they work, but the remaining 58 per cent pay an average of $33.00 a month for either small apartments or rooms. These accommodations vary greatly in quality, and even some of the very inexpensive ones are by no means squalid. Thirteen boys spend about $24.00 a month or less for rent.

Expenditures for clothing, medical and dental care, transportation and recreation are presented in graphic form in the four accompanying tables. They require some comment. It is apparent in all that our expenditures are below family averages for this area. The discrepancy between comparative expenditures for recreation and clothing is an interesting one. The young student, married or unmarried, living on a small income, limits his recreational expenses somewhat but still retains some normal outlets from his studies and employment. He probably needs these outlets worse than a family centered around a 40-hour-a-week worker. Where he does save money, particularly if married, is on clothing. The fact that the average expenditure is less than for welfare recipients is significant. It does not imply that he enters the school with an abundant supply of clothing. Most of the students have very small wardrobes. They and their wives survive the lean years on hopes of a future adequate income from practice which will serve to clothe, feed and house them at least as well as the average Boston citizen.

Transportation costs are mostly due to commuting and only partly from going from one hospital to another. If adequate housing were provided in the neighborhood, this item would be less.

Twenty-five per cent of the married students and 45 per cent of the single ones spend nothing on medical or dental care each year. Except as far as their teeth are concerned, it probably represents no great neglect. The expenditures by the other students compare favorably with the family averages.

Our single students spend $185 a year, on an average, for books and medical supplies, including microscopes. The maximum spent is $750, the least zero. Married students average $125, with a high of $400 and a low of $20.00. The national average for private schools, exclusive of microscope expenditures, is $135. From this it is obvious that many of our students do not have enough money for basic educational equipment. This is often reflected in their grades. Boys who cannot afford to purchase a textbook must use one in the library. They often do not have an ample opportunity to do so, particularly if they have some part-time employment.

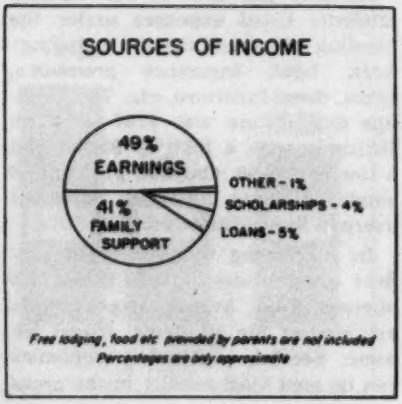
Seventy per cent of the married students listed expenses under the heading of miscellaneous, including: heat, light, insurance premiums, taxes, dues, furniture, etc. The average expenditure was $167 for those listing it, with a high of $1,100 and a low of $10.00. Only 48 per cent of single students listed it, with an average expenditure of $343.

In concluding this survey of student expenditures certain things are obvious. First, average expenditures are modest for all items, frugal for some. Second, particular economies can be seen most readily in the areas

of clothing, food, rent and medical supplies. Third, sacrifice and hardship are greater for married students than for single ones, sometimes to the detriment of the marital relationship. Last, the following facts stand out: Twenty-eight married and at least 8 single students are badly housed. More than half of the married students, and a third of the single ones have inadequate funds for clothing. Eighty-three students (over a quarter of the student body) cannot buy all the basic books and supplies they need, and 9 married and 25 single students do not have enough money for food.

Sources of Income

The reason why the average married student does not have enough money to spend on clothing and some other items, and why many of the single students cannot buy the books they need or meet other pressing expenses, is because they cannot obtain an adequate income. It is important to see just why this is so. The sources available to them are gifts from their family or friends, money earned while at school or on vacation, loans and scholarships, savings and money from the federal government. Parents represent one of the two largest single sources of income, but at that, on the average, they supply less than a half of what is spent by the single student, and less than a third of what the married ones need. For only 9 single students and 5 married ones, or 5 per cent of the whole student body, is the amount received sufficient for complete support. Two thirds of the married ones and 77 per cent of the single ones received some financial support, but 28 married and 29 single students received nothing. In other words, 22 per cent of the student body is finding all of its own funds. That is not the complete picture, however, because although the average gift from those parents who render some help is $1,838 for married students and $1,468 for single ones, there are a number of parents whose contribution is in the range of only $50.00 to $300 a year, which is of but slight help.



Our knowledge concerning parental income is not complete. Twenty married students and 30 single ones did not answer the question regarding their parents' income, either out of ignorance or embarrassment. Among those who did, we find an average $8,184 for the parents of married students and $7,838 for those of single ones. Considering the fact that most of these families have more than one child and many other commitments, it is surprising that they contribute as much as they do. Even those parents with these average incomes would find it well nigh impossible to meet the average student needs of $2,284 if single or $3,634 if married. It is easy to see, therefore, why only 5 per cent receives full support from parents. At the same time we can see that the concept, so often heard, of a poor

family sacrificing everything to put a boy through medical school is only relative. A poor family, unless it has considerable savings can, at best, only help; a family in moderate circumstances will find it difficult to finance such an education out of income; and only the moderately well-to-do or rich can really afford it. The medical student of today is largely on his own, financially. He must earn his support, borrow it, win scholarship aid or indenture himself to the government. This is typical of students throughout the country. Our own students, on an average, receive help from their parents in a slightly larger number and slightly greater amount than do students elsewhere.

When it comes to self-support, our students do more and earn more than do students at other schools, on an average. Although only 75 per cent of our students are employed in the summer vacations, as compared with 73 per cent in other medical schools, it must be remembered that our fourth-year students receive no summer vacation and hence are largely excluded from such earnings. They do have a month off at some time during the year; however it provides little time for earning money. Students can earn an average of $602 each summer as compared with earnings of $550 per student elsewhere. The largest amount earned is a little over $1,500. In the winter 38 per cent of our students have salaried jobs, bringing in an average of $853 for the academic year, compared with 26 per cent employment and $450 earned on the average at other schools. Twenty-two per cent of our students receive support from their wives, the average amount being $2,789 as compared with national averages of 22 per cent and $2,500. In addition, 1 student receives his lodging, 5 their board and 21 both, in return for work; in other words ten per cent do work for this type of recompense. All in all, nearly half of our student body is engaged in some outside work during the school year. This is an enviable record in terms of motivation and enterprise, but what actually are its practical results, and how much interference is there with academic achievement? The average number of hours of work each week is 14.3 for the married and 19 for the single students. The high is 50, and the low 3. The average income for both groups is $19.50 with a high of $90.00 and a low of $3.00. Forty-one per cent of the married students and 47 per cent of the single ones stated quite frankly that their jobs interfered with their studies. This is painfully evident to the faculty in many instances, when a bright boy whose academic achievements at college give great promise of similar accomplishments at medical school, becomes a fixture in the lower part of the class because of his work load. Some poor students have flunked out because of it, and more than one student has shown evidences of mental strain. Nor does the problem end there. Boston is rich in medical culture, with all sorts of visiting lecturers talking each day at different hospitals and medical schools. For the boy who has to work to support himself, attendance at these lectures, which might do much to stimulate and develop him, is out of the question.

Employment of the student's wife can be a great financial help, even though it creates some strain and a reversal of the conventional domestic roles, but it ends abruptly after the wife becomes pregnant. Vacation employment we regard as a more

logical source of income than that in the school year, but it, too, has drawbacks. The student must perforce choose the job which pays the best, and such jobs, unless he is very fortunate, are ones which contribute nothing to his intellectual development or medical training. For example, students will usually seek jobs as bus boys, which pay well, in preference to ones in research laboratories, which pay very little, even though the latter have considerable educational and training value. It is difficult to say whether a student should work, and if so, how much. Ideally his employment should be in jobs which will improve his academic stature and only during summer vacation, with some time off for recreation. If he is married and his wife is healthy, there is no reason she should not work for the support of the couple as a part of the price of an early marriage. During the school year no student should have to work. But this is not practical. Including both earnings and the approximate value of board and lodging, the students bring in an aggregate of $83,413 during the school year. To replace this by scholarships would require over a million and a half dollars endowment at current rates of interest. The wives earn $161,772 a year, and the students receive $117,420 for their vacation labors. Altogether their combined earnings total $364,605, which is $59,000 more than their families contribute, and $90,000 more than their total tuition fees. It is ten times what they borrow each year in loans, and thirteen times what they obtain in scholarships. Considering the relatively high academic performance of our students, this is an extraordinary achievement. As almost half of the students employed during the school year feel that their work suffers because of their labors, it might be fair to say that anyone working more than the average number of hours (19 per week for married students, 14 for single) is working too much. Actually, many of the jobs with long hours require little actual work and interfere little with studies. It is more rational to find scholarship funds to underwrite 40 to 50 per cent of the winter employment and then select the jobs for the students according to the student's abilities, as well as the job requirements.

Scholarship funds are given on the basis of need, provided the students are reasonable academic risks. They are needed most by those first-year students who have no reserves and have not yet been able to obtain jobs, by those students whose families have had to diminish their financial assistance, and particularly by fourth-year students who have little or no time for employment. Fifty students a year receive $27,123, in scholarship money from various sources, $10,000 of which is donated by the alumni. The scholarship range is from $50.00 to $2,820 with the average being $542. Most of these scholarships need not be repaid, or if they do it is on a long range basis, permitting the young doctor to enter his earning years before repayment or interest begins. Actually, such a "scholarship" is a loan, regardless of how reasonable are its terms, and causes considerable worry to the student when he is planning his postgraduate training. It is probably more sensible to make scholarships outright gifts, and then ten years after the recipient has been graduated to approach him for money to help others through school.

Straight loans have a deleterious effect upon plans for postgraduate training, because they tend to make

the student select the internship which pays the best, and these are often ones in which opportunity for learning is less. Fifty-three of our students each year obtain a total of $39,900 or $658 per student. The loans are often not repeated if a boy is able to obtain scholarships or employment. They are particularly useful for sudden emergencies or crises in family affairs. The fourth-year student make more use of them than do the others. We do not include money from parents as "loans," although many students consider some of it as such, with the intent to repay so that the money may be used for the education of other siblings. Last year's graduating class contained 20 boys who borrowed at some time or other while in school a total of $27,400 or $1,370 each, with a high of $2,500 and a low of $350. This is exclusive of what they believed they owed to their families and intended to repay, which amounted to as much as $8,000 in some cases.

Payments under the G.I. Bill are rapidly coming to a halt; they varied in amounts, averaging about $1,000 a year. They are being replaced by enrollment in the government services while at medical school, with periods of active service at full pay during vacations, maintenance during school and a period of service owed to the government after graduation. Only a few students are selected for this service. Its intent is good insofar as the students' financial assistance and its ultimate goal of enlarging the pool of available doctors for government service are concerned. This system of indenture is open to question, however, in that it diminishes the selection open to the student in civilian hospitals, regardless of the time he elects to undertake his federal service; removes him from the normal channels of succession in hospital appointments, which may be difficult to return to; and lastly, offers him a training under qualified men, to be sure, but of varying degrees of teaching ability and skill, and no dependable constancy of quality at any given station because of frequent transfers of personnel.

Conclusions

At the present time some of our students are so short of funds that they do not have enough money for clothing, books, food or rent. The student body, as a whole, tries in a valiant effort to provide its own support, furnishing approximately one-half of the necessary income out of earnings. As compared with other medical schools, we have 80 per cent more students employed during the school year than the national average. The effect of this effort is detrimental to studies in many instances. As long as we are firmly convinced that students should be given the opportunity to study medicine regardless of their financial status, we must accept some responsibility to see to it that they are not in want nor do their studies suffer, because of straightened circumstances. The best means for meeting their needs is by endowed scholarships to be granted to those of adequate academic standing on the basis of their financial requirements.

How much money is needed? This is a difficult question to answer. The average expenditure of all those reporting them are adequate for all items, except clothing and books. It is the students whose incomes are way below average who are suffering. If the money were provided to permit these students to attain the average spent on food and rent, it would cost approximately $32,000 a

year. To bring the expenditures for clothing up to a more adequate level, still in some instances below welfare payments, would cost $10,065. To bring our expenditures for books and supplies up to the national medical school average would cost $2,080. In estimating these sums we have figured that students who did not report expenditures should be considered as having enough money for these items concerned. The total of these estimates is $44,416 and they do not include more money for transportation, medical care, recreation, insurance, utilities, etc. To lessen the amount of employment in the winter to a level compatible with good scholarship, the working hours would have to be cut in half. This would require $41,700. This means a grand total of $86,000 is needed.

To provide this income, scholarship endowment of around $1,700,000 will be necessary. This amount of money may seem large, but it represents an addition to present income of $160 a year per student. Such additional funds for scholarships would create no luxurious living conditions, but would mean that our students would be better equipped and have more time to become better doctors, a matter of great importance in terms of the health of the people we serve.

SOURCES

U. S. Department of Labor, Bureau of Labor Statistics, 18 Oliver Street, Boston, Massachusetts. Study of consumer expenditures, incomes and savings in 1950, in eight New England cities.

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Medical Education Forum

Editorials

More Bricks and Mortar?

A VAST MAJORITY of the grants-in-aid or contracts available for the support of research contain a built-in stipulation that the funds shall not be used for bricks and mortar. It is true that bricks and mortar do not make the research scientist any more than clothes make the man. But along the research road there is a point where manpower and productivity may so far outstrip the facilities that enthusiasm and efficiency begin to wane. Such a situation has become increasingly apparent in medical science during recent years. Funds for support have far outstripped the facilities available for research.

In recognition of this dilemma the 1956 Federal Congress appropriated 30 million dollars a year for three years to be used on a matching basis for the construction of facilities for research in the health field. In the 15 month period during which the program has been in operation 364 applications have been submitted for a total of $147,058,684.

The second annual report on the program lists Medicine, Dentistry, Nursing, Pharmacy, Public Health, Veterinary Medicine, Sanitary Engineering, Biology, Psychology, Chemistry, Physics and Biophysics as disciplines which have been included for support.

A little arithmetic reveals that funds were not available for applications totaling over 50 million dollars. Further, an additional 30 million dollars has been requested in letters of intent.

Fortunately bills have been introduced in both the House and the Senate calling for an expansion of the program to include funds for addional educational as well as research facilities. Certainly, the passage of such legislation would give medical education and medical research a tremendous shot in the arm.

The previous legislation was enacted with the invaluable words of a few devoted medical educators. Yet a review of the recent report shows that fifty-three medical schools have received funds under the program—and others are drawing plans or preparing applications. The beneficiaries should express appreciation to their legislative representatives and those seeking support should make similar contact.

The soaring national interest in research and education suggests that this Congress is a particularly propitious time for gaining an expanded and extended program. The articulate support of medical education is essential—and urgently needed. J.Z.B.

Addresses

Dedication of the Medical Research Building*

Virgil M. Hancher†

In view of what has been said today and what will be said tomorrow by those more technically qualified than I to speak on the subject of research, I have no expectation of saying anything original or startling on this occasion; and I shall not apologize if no flash of genius comes to illumine these remarks with a penetrating insight destined to change the course of our thinking or the tenor of our lives! On the contrary, I shall be moved by the example of the good Christian who repeats the Lord's Prayer—or the good Jew who repeats the Shema—or the good Buddhist who concentrates in mystic meditation—or the good Muslim who faces Mecca daily and repeats the ancient prayers of his people—not because they are new or startling or original, but because they are reaffirmations and reminders of an ancient faith. So on this occasion I shall be content if my remarks remind us of our faith—of what we, members of an academic community, hold as a basic tenet of our calling.

Now that the Medical Research Building has been completed, what will it mean to the men who work in it? What kind of men will they be? What will they contribute to the science of medicine? What is the relation of scientific investigation to the practice and to the teaching of medicine? What is the role of the teacher-scientist in medicine?

The social value of the practicing physician is measured, I suppose, by the number of patients he can see and serve beneficially. The teacher-physician, on the other hand, plays a different role. His value to society is measured not only by the number of patients he can see and serve beneficially but, vicariously, by the faithful ministrations of all those whom he teaches and prepares for the practice of medicine. But what of the "teacher-scientist" or the "teacher-physician-scientist" who goes beyond both curative arts and teaching procedures to seek the basic cause of disease and perchance to find a therapy which will reduce its incidence or eliminate it altogether? What is the measure of the value of that man to society? How do we measure the value of suffering eliminated—or of pain no longer borne by hundreds of thousands or even millions of potential victims, or the value of the health and productivity that come in place of disease and suffering and incapacity? Here we see the transforming power of science in a most dramatic and beneficent manifestation. Its value is beyond price; indeed, it is beyond measurement.

Not only are we concerned with research, but we are concerned more specifically with research in a university setting. We have had universities in the Western world for nearly a thousand years; and it is worthy of note that the first of these universities, the University of Salerno, was

*From an address delivered at the dedication of the new Medical Research Center, State University of Iowa, Iowa City, on November 21, 1957.

†President, State University of Iowa.

almost wholly devoted to medicine. Our university, the State University of Iowa, now only in its second century, is young by European standards; but if it be as durable as Bologna or Paris or Oxford or Cambridge, it should last for a thousand years. We, who are now part of this university, may, therefore, cast long shadows on the future. It is a solemn thought. It is imperative that we do well whatever we undertake to do. What then are the functions of this university, indeed of all great universities, in modern society? By common consent and understanding, the primary functions are three: teaching, research, and service. Tonight I shall not speak of teaching and service, even though modern society could not exist without them. Rather I shall speak briefly about research, not only because of the dedication of the Medical Research Building, but also because no age has been dedicated, as ours is dedicated, to an aggressive and organized attack upon the areas of ignorance and to the advancement of knowledge. In this task, complex universities and technological institutions have played and must continue to play a most important part. And so I shall refer briefly to the components of effective research in such institutions.

What, then, are the components of effective research? The first component, I should say, is the man; and, if you desire great research, get a great man. I once asked the very wise director of a foundation what he sought first in determining the potentiality of a young artist. His thoughtful and incisive judgment was immediate and unhesitating: "I look for a great soul." If a great artist and a small man seem a contradiction in terms, how much less should we expect to find a great scientist and a small man in the same skin? What shall be the scientist's goal? The matter has rarely been put more accurately or concisely than it was put in an editorial in the New York *Times* for Sunday, November 3, 1957, on the Nobel Prize awards in physics and chemistry:

"Both awards," said the *Times*, "are for fundamental contributions that opened up new horizons in man's eternal quest for more basic knowledge about the constitution and structure of his universe and the mechanisms that underlie the multifarious and highly complex processes of nature and of life."

The Hebrew prophets are revered throughout the Western world because of their insights into the nature of man and his relation to the world around him. In certain respects the great scientists of our day stand in the same tradition; for in the precision of their laboratories and in the quiet of their minds, they are probing deeper and ever deeper into the secrets of the universe. Quite literally they are revealing "the ways of God to Man."

What is the first ingredient of research? It is a man. What kind of man? No small man will do. We look for a great soul!

To this audience I need not stress the importance of facilities as a second component of effective research. The development of spectrophotometers, electronic brains, and high energy accelerators has sufficiently dramatized the wizardry of scientists and engineers in perfecting new instrumentalities for exploring the unknown. The first and most significant component of research is the man, but the effectiveness of

the man may often be multiplied many times by the utilization of effective instrumentalities. This raises a serious problem for universities and for the donors and taxpayers who support them. The place of universities in research during the last 50 years and especially the last 25 years is clear and unequivocal, but mounting costs have rendered precarious the situation of many universities in relation to the research efforts of giant corporations and governmental laboratories. We must remember also that universities were not always centers of research. Many of the great scientific advances of the last century and some of the present century were made altogether outside the universities. Because of the establishment of great research foundations, the channeling of talent from academic to industrial laboratories and the vast sums of money required for modern research, it is no longer certain that universities can provide the resources and the conditions under which scientists and scholars may flourish, and under which they would normally prepare the next generation. I sincerely hope that they can. I believe that they can. It would be tragic if they could not, because it is still true that only a few laboratories outside an academic community can provide the intellectual stimulus and facilitate the interchange of ideas which are the distinguishing marks of the university community of scientists and scholars.

The third component of research is time. It takes time to discover new knowledge—to add to the known and reduce the dimensions of the unknown—to verify and confirm or to disprove and reject some theory or hypothesis. Time is an elusive commodity which seems to shrink and grow more precious as we seek to save and conserve it. And the sheer magnitude of what we know creates new problems. How can the scientist do his research, keep pace with the flow of new knowledge from the researches of others, continue to comprehend the relations of things and grasp the relevance of new knowledge to existing knowledge in another field or even in his own? Where are the synoptic minds equal to the task? Where is the time for reflection and contemplation required for assimilation and understanding?

Yet it is apparent that the true interpretation and understanding of existing knowledge have an importance not unlike the discovery of new knowledge. Interpretation can be a contribution as fundamental as discovery.

The Nobel Prize awards in physics to Professor Chen Ning Yang and Professor Tsung Dao Lee seem to have been given not so much for the discovery of new and unknown facts as for the discovery that the known facts were not adequately explained by existing theory and for the development of a new theory which provided a better explanation for known facts. More and more as the volume of facts increases, as the fields of knowledge are extended, we shall need synoptic minds able to survey large segments of the scientific advances of our time, able to see them in relation to each other, and able to provide new and more satsfactory explanations of the phenomena which we know.

We need this calm and reasoned approach because we stand in danger of believing that money and a sense of urgency will mitigate our present

condition—that two billion dollars appropriated tomorrow will produce a hundred thousand engineers, a satellite more impressive than Sputnik, a dozen Einsteins, or a cure for cancer on the day after tomorrow. Money for the scientist? We may well need two billions and far, far more. But money alone does nothing. We need men—more men—and it takes time to educate them. We need facilities, and it takes time to build them. We need time, and that we cannot buy! Scientific advancement cannot be paid for and delivery demanded on a due date. Even two billion dollars will not produce one baby in less than the appointed time. And so for our sins of commission, but more for our sins of omission, we, as a people, must give the scientists and the scholars time and resources, and prestige, and compensation—and the assurance that there stands behind them—not a fickle mob, blown about by every changing wind—but a people firm of purpose and clear of vision, filled with a love of learning, seeking wisdom and understanding, mindful that these are the products of slow and often painful growth.

The fourth and final component that I would mention is freedom. However great the man, however excellent the facilities, however generous the time allotted, nothing commensurate with his best can be produced if the scientist lacks freedom. The Russians are proving that it is enough for a limited time, at least, if scientists be free within the domain of science. But we proceed, wisely and correctly, I hope, in the conviction that those who are free in the domain of science will ultimately demand and achieve freedom in the domain of politics and that those not free in the domain of politics cannot remain permanently free in the domain of science. We believe that time and human nature are on our side. To us freedom is the priceless ingredient.

Man and facilities, time and freedom: these are the components of effective research. Each of them is the concern of a university. Each is an element in the making of a university; each is an element in the making of a true community of scholars.

Our appreciation for the Medical Research Building—our belief in its worth—can best be demonstrated by making our own University a true community of scholars. Let us establish here the foundations upon which we and others may build—for a hundred or perhaps even for a thousand years.

New Models: An American Pattern*

Aura Edward Severinghaus†

SOMEWHAT MORE THAN 50 years ago, Father stopped the buggy so that I could reach out and pull a wooden handle that dangled from the end of a long arm extending from the new farm gate. Even as a child pulled, the big gate swung open in the opposite direction. A pull on a second handle after we had passed through, closed the gate again back of us. A new model gate had replaced the heavily hinged one which had swung there for so many years. I missed the sturdy old gate for, as

a small boy, I was permitted to ride it as it described its arc. I mention this incident not only because it illustrates in a very simple way the technical application of science to our daily living but also because Father told me years later that watching me swing into that 50 acre pasture on the old gate symbolized for him the perfect text for a sermon —something you can swing in on into a large area; and, once inside, you are free to wander where you will. Some months ago when I was asked to submit a title for the remarks I am to make this morning, and knew only in a general way what I wanted to talk about, I settled for a "pasture-gate" topic. New Models: An American Pattern.

Everyone will agree that we are living in a time characterized by revolutionary progress and change, howbeit these two are often confused one with the other. And I would not wish you to infer from my comment about missing the old farm gate that I long for a return to the good old days or hope for the maintenance of the *status quo*. In fact, I find myself agreeing with the fellow who explained the meaning of these words to a less schooled companion, with whom he had listened to an organizer who referred over and over again to the *"status-quo."* "Of course I know what the two little foreign words mean: they stand for the hell-of-a-mess we're in." And may I caution those of you newly come to this busy, time-conscious Medical Center, that certain professors here use such time-saving words as *status quo, sine qua non, quid proquo,* etc., and they may be disturbed if you should use up the time just saved by asking what the words mean.

In fact, I had thought of speaking on Time—The Tyrant, one of several who rule us today. We are forever struggling to save time. A fat man running up an escalator has been suggested as our coat-of-arms. We salute the Tyrant not with extended palm but with pronated, flexed left arm. We have forgotten the admonition "let not thy left hand know what thy right hand doeth," and instead we have the left wrist constantly keeping the right hand on schedule. You'll see the salute all over this amphitheatre, whether or not I now move rapidly into my subject or whether or not I confine my remarks to the allotted 30 minutes.

I have quoted earlier the prophetic words written by Thomas Huxley almost a century ago: "The whole of modern thought is steeped in science; it has made its way into the works of our best poets, and even the mere man of letters, who affects to ignore and despise science, is unconsciously impregnated with her spirit and indebted for his best products to her methods. I believe that the greatest intellectual revolution mankind has yet seen is now slowly taking place by her agency. She is teaching the world that the ultimate court of appeal is observation and experiment and not authority; she is teaching it to estimate the value of evidence; she is creating a firm and living faith in the existence of immutable moral and physical laws, perfect obedience to which is the highest possible aim of an intelligent being."

Huxley must also have been well aware of the even more spectacular

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*An address delivered at the Opening Exercises of the Faculty of Medicine, Columbia University, September 16, 1957.

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expansion of technology, for the technician was becoming the newly idolized hero as early as the seventeenth century. Thus, Francis Bacon wrote: "The real and legitimate goal of the sciences is the endowment of human life with new inventions and riches. Inventions are a blessing and a benefit without injuring or afflicting any."

But in spite of the material comforts which our technical civilization has given us, we find ourselves face-to-face with methods and manipulations, omnipresent practices which profoundly affect our lives, forces being developed which can reshape human qualities and relationships. This is what our own Paul Tillich pointed out last spring in an address at the New School for Social Research. For industry not only produces a patternization in the manufacture of objects but also for the selection of its executives and the management of its personnel. The whole process tends to make of man "an object caught in the machine of production and consumption."

The central principle of our present system of manufacture and marketing is the now well established practice of constantly producing new models of everything we have and use. Whether or not one approves of these methods, which certainly have not elevated our social culture or strengthened our sense of moral values, new models are being sold. Serviceable commodities are made obsolete and their intrinsic values depreciated or destroyed by a clever system of dating. We rush out to acquire replacements, believing that insignificant modifications and trivial alterations represent genuine progress and that we now have something vastly superior to what we had. We are new model-conditioned. Even though it costs, we go along "keeping up with the Joneses" in unprotesting conformity. The economic waste is staggering, and some day it will catch up with us.

I have been attempting to show the manner in which a single agency can affect our lives, force us to conform. Were I attempting to name the besetting danger of our time, I would consider nominating "unprotesting conformity." Joining the conforming forces of our technical civilization is the wide-spread and growing sense of insecurity. Toynbee has shown how throughout history insecurity in a people has led them to conform without protest and to adopt an attitude of neutrality toward society. We fear, of course, the threat of invading ideologies hostile to the democratic way of life, which would destroy the dignity of the individual. We fear, also, that the love of liberty and decency will die in the souls of those already forced against their wills into rigid conformation. However, the recent release of the Purdue Studies on nation-wide teenage opinion in this country, which Inez Robb has reviewed, is to me even more disquieting. More than 50 per cent of American high school students are reported to believe *(a)* that most people are incapable of deciding what is best for them; *(b)* that politics is beyond the comprehension of the citizen, and, in addition, it's a dirty job, run by crooks; *(c)* that wiretapping and the third degree should be legalized to assist authorities to maintain obedience (26 per cent endorsed unlimited search and seizure without warrant); *(d)* that censorship of books, movies, radio, and TV should be invested in the police to protect ourselves from improper

thinking. These are the thoughts of citizens of tomorrow, apparently unaware of or unconcerned about the authoritarian implications of their thinking and ready to place freedom, liberty, and justice in jeopardy, if only they can avoid personal responsibility and be secure.

Now no individual, no industrial, social, political, educational, or religious organization can escape the heavy pressures of patternization. In fact, these forces are inherent in our civilization. Our problem is not how to avoid them but how to live with them, control them, or counteract them. Read that absorbing little book "The Theory of Education in the United States," written a generation ago by a distinguished Columbia scholar, Albert Jay Nock, and see how the liberal arts college at that time, conforming with the democratic and *laudable* pressure of broadening its base, veered away from a traditional responsibility—namely, education for leadership, and under the increasing pressures of technocracy more and more converted education into vocational training. Now we are attempting desperately to uncover leadership, confident that President Dodds of Princeton was right when he insisted, "It is clear that our vexed world will not be saved by the purely vocational mind."

The concept of conformity is strangely paradoxical. Whereas it has inherent binding and cohesive implications, when applied in society it operates with dividing and splintering impact. Industry, commissioned in our technological time to endow, as Bacon said, "human life with inventions and riches," has achieved an almost incredible goal by insisting on a pattern of strict conformity. It broke up its total job through a division of labor until each separate operation could be standardized and a uniform product of high quality assured. Then these individual assignments were arranged in an assembly line, and assembly lines will eventually melt into total automation.

There he stands, he who is still on the assembly line, inserting and tightening a dozen bolts as industry's creation moves past his station. He is not left so much as the responsibility of deciding when the bolts are tight enough, for when they are tight enough the pneumatic wrench which he is using is designed to slip its clutch. We are no longer confident that 'inventions are a blessing and a benefit without injuring or afflicting any." On the contrary, Toynbee now writes that "the impact of civilization tends to accentuate the division of labor to a degree at which it threatens not merely to bring diminishing social returns but to become actually antisocial in its working, and the effect is produced in the lives of the creative minority and the uncreative majority alike. The creators are pushed into esotericism and the rank and file into lopsidedness." In this connection esotericism applies to persons of fine potential and talent, but who do not make these available to society.

We can be proud of the accomplishments of our schools, our colleges, and universities. Here, too, we have divided the total job into unit operations. There can be no doubt but that the contributions of the university have been multiplied and magnified through its organization into faculties, and the further division of its faculties into departments. The great accumulation of knowledge which has resulted makes certain even greater specialization in the future. Our scholars have conformed into

smaller and smaller groups, and concentrated their creative powers in ever restricted areas with telling effect. They have been, for the most part, unmolested and uninhibited by other conforming groups of their colleagues, although lacking at times their sympathetic understanding.

Our problems are not those which workers in industry face. We in education are not in danger of eliminating ourselves from the production line. In the professions, especially in engineering and teaching, and those grouped under the faculty of medicine, the public seems keenly aware of a shortage of personnel. *Our* ultimate professional goal in medicine should be self-elimination, but in spite of the almost miraculous conquest against disease and suffering, this goal is not in sight. Education stands unique in that its commodity and its consumer are one and the same. In a sense, we in education must leave the production of our commodity largely to our fellowmen, who, according to statistics, have been on the job. If I were to carry out the analogy with industrial organization, I should say that our task in education is probably more a matter of maintenance and repair, perhaps also "new parts." But as George Stoddard has said in substance, education is the one corporate institution that now stands aghast before a rapidly expanding market.

Yet we are not without our own inherent problems. In 1951 in a most provocative paper, entitled "The Proper Study," one of Princeton's illustrious professors emeritus, Charles Grosvenor Osgood, suggested that education was in danger of "specializing itself out of all conception of a *Studium Generale* or university"; of losing "philosophic and encyclopedic control and import." Specialization, desirable and inevitable as it is, has produced such a "vast expanse of our knowledge (that) the body of learning, once so well ordered and compact, has swollen until it has burst into ten thousand fragments, and no turn of the academic kaleidoscope can bring these fragments into a consistent or lasting design. It is like the proverbial man who gave up reading the encyclopedia because he couldn't follow the story. In the face of this situation we are doing our best to put things to rights by grouping and planning and replanning our course of study. We are forever ripping up the curriculum, so that the House of Knowledge is never in order for enough time to let its teaching occupants settle down to the devoted practice of their arts in the peace that the practice of higher art demands." Professor Osgood further fears that the "four obvious defects of our education: vocationalism, the domination of science, specialization, and disintegration" seem so inevitable "that most academic administrators wearily accept them as demands of the time, and makeshift to keep house as best they can in helpless conformity." Well, things have gotten hopelessly complex, and one wonders at times whether God himself can see our way out. The perplexed minister seeking help from Above may be excused for having begun his prayer: "Paradoxically, as it may seem to thee, O God."

The character of the remedy is, of course, obvious. "A society cannot maintain its social cohesion unless a decisive majority of its members hold in common a number of ideas and ideals" (Toynbee). Our democratic society, packed with genius and surfeited with a diversity of skills will nevertheless come to grief unless, in addition to his specialized in-

terest, each individual is willing to assume the responsibility of citizenship; know what the ideas and ideals of the nation are, help to reshape them if they are not what they should be; and then pledge his sympathy, loyalty and personal effort to reach a transcending objective. The same formula must be applied to the university, the faculty, the department. Genius will lie in discovering and clarifying an objective which has transcendent qualities. Nor does it follow that we shall all be led into general conformity, for the creative power of the individual is still the touchstone to collective progress. Nor can we afford to delay action until everyone has reached agreement. This sometimes takes too long. Ray Lyman Wilbur is reported to have presented a rather important resolution to the Stanford Trustees for action, and to have obtained almost immediate, unanimous adoption. President Wilbur is said to have bowed his head for a moment before he looked up to say: "Thank you, Gentlemen, I was just wondering whether your quick unanimous action means that I should have presented the matter to you ten years ago."

In most of our colleges and universities today we see evidence of a deep concern to reevaluate programs, progress, and objectives. In this university and in this faculty, we have such studies in progress. It goes beyond a restlessness which could be temporarily quieted by tinkering with the curriculum. Moreover there are outside forces, some of them powerful, convinced that education needs a rebirth, a new approach, a new design. I suppose we should take comfort in the fact that some folks are confident that they know what the changes should be. New financial support must be found, and fortunately it is coming forward from public, foundation, and private sources. But it would seem, at times, that the more unique the new program, the more certain it is to win financial support. I used the word unique, because recently an educator speaking in a group of his colleagues remarked, perhaps in jest: "Well I don't know how the thing is going to turn out—time will tell—but we had to do something unique, we were no longer competing successfully with some of the rest of you." (This has also something of the flavor of competitive marketing).

New educational models have appeared and will be brought out in increasing numbers. Two things must be guarded against: (a) that the alterations are not trivial or insignificant, but basic; and (b) that we be not overcome by a false sense of obsolescence. I have something new; you should be like me; or, they have something new; we should be like them.

If we can identify and concentrate upon those components in education which are basic and timeless, we may discover the magic cohesives which we need and seek; at least, we will have made improvements in essential parts which must be built into any educational model, old or new. I suggest that we think about four of these components. They are all attitudes of mind.

1) Our attitude toward factual knowledge. (An open, cautious and critical mind.)

2) Our attitude toward each other. (A friendly, appreciative, sympathetic, and tolerant mind.)

3) Our attitude toward our work. (An eager and active mind.)

4) Our concern for a sense of values by which we direct our efforts. (A humble but resolute mind.)

Factual Knowledge

We are all aware of the importance of factual knowledge, but no one, it seems to me, has summarized the proper approach to facts in clearer fashion than Theodore Greene:

"Our academic concern with facts is fully justified, provided we do not idolize isolated facts, and provided that we particularly stress fact-finding, fact-testing, and fact-facing; in other words, that we become fact-conscious, learn how to recognize a fact when we see one and to be loyal to fact in all its forms." But facts have no reality apart from man's mind, and at times they become confused with interpretation. For nostalgic reasons, at least, let me refer to the secretory cell to illustrate my point. Numerous observations and experiments established the fact that certain cytoplasmic granules in the secretory cell contain the secretory substances. Not only can the granules be seen and described but, upon implantation in a host animal, they produce a physiological response. Cells without granules produce no effect when implanted. Hence, a statement in the literature, presumably factual: cells with granules are active secretory cells, cells without granules are inactive. The day came, however, when this generalization did not agree with excellent experimental data. But here a new technical approach to these presumably inactive secretory cells showed that they were indeed extremely active, even though they were devoid of granules. The explanation lay in the fact that they were discharging their secretory granules as rapidly as they were being formed. Thus, a new approach to the cell gave us a new factual conception.

I illustrated this by taking two simultaneous photographs of Columbus Circle, which, for nostalgic reasons, also, some of you might be interested to see. One, an instantaneous exposure, caught all the activity in the area; but the other, a long pinhole time-exposure, recorded only the framework of buildings. Our technical approach determined what we actually saw in the pictures.

Leonardo de Vinci, centuries ahead of his time, wrote: "Wisdom is the daughter of experience . . . Experience never misleads; what you are mislead by is only your judgments, and these mislead you by anticipating results from experience of a kind that is not produced in your experiments. Instead of making this instance into a general rule, verify it two or three times over, and watch whether these several verifications do produce similar results."

Or come with me outside the area of science. There stands the Yosemite in all its grandeur. Many of you have visited it. It is a fact, you can see it, hear it, touch it. Yet it is what it means to you, and what it means depends upon the way you approach it. It is one thing to an explorer with his eyes glued to a Geiger counter; something quite different to the industrialist calculating the potential of its forests and water power; something still different to the artist who hopes to transfer its intrinsic

beauty to canvas; and a weary discouraged traveler may mysteriously find his spirits quickened and utter "I will lift up mine eyes unto the hills, from whence cometh my strength!"

Our Attitude toward Each Other

Especially in educational disciplines in the broad area of the healing arts, we must give constant attention to the development of sympathy and skill in interpersonal relationships. What one says of the teacher, student, or administrator, one can say for all; for in one constant, their *spirit*, all should be alike. I had written a paragraph to use here, but after rereading Professor Osgood's paper I want to substitute one of his. "Through all time there has been and still is one constant, the spirit of a man, the man who teaches and the man who learns, for teaching is far more than an academic profession. These two men (student and teacher) are almost one, for they are both enlisted in the same enterprise, and distinguishable less by function than by degree of maturity. The restoration (of education) can proceed only out of such a constant. It can spring only from a true and sympathetic appraisal of the makeup of an individual human being, and a paramount concern for his intellectual and spiritual destiny.

We need, therefore, teachers who, however learned and expert, transcend their specialty with a constant sense of its final value in human terms; so that whatever they teach, science or humanities, their teaching is authenticated, not only by their expert knowledge, but by this transcendent sense of its real values, in short, the teacher who is humanly greater than his subject."

In a time when mass communication has captured our imaginations we should resolve to strengthen those shorter lines which run between individual persons—teacher, student, patient.

I was impressed recently by the coincidence that a number of little words, all of which apply to human relationships, begin with the letter "W:" who, whom, which, what, where, when, why, watch. *Who* will say or do it; to *whom* should it be said or done; *which* approach shall I use; *what* are likely to be the results; *where* do I begin; *when* is the appropriate moment; *why* do I do it all; *watch*, ever watch.

Our Attitude toward Our Work

If by magic there were developed in every man and woman an enthusiasm for his work, most of the problems everywhere would vanish. What would a nation-wide inquiry show that asked of every employed person: "Do you contemplate your working hours with as much enthusiasm as your leisure hours?" or "If you were not obliged to earn a living, would you like to continue at your present job?" We have already seen in certain situations in industry that the dignity of work and any enthusiasm for it could hardly be expected to survive. The professional man has more reason to be enthusiastic. In the early Roman-Hellenic days when slaves were driven at their tasks there was a disdain for work, but with the flowering of Judaic culture, work took on a new significance, the quality of an assignment for the public good, frequently presumed to have emanated from Jehovah. Thus the early scriptures

speak of God's work or man's "good works." The concept of enthusiasm also has a spiritual flavor. Its derivation from the Greek, En Theos (God in), indicates that an enthusiastic man seems to be fired with a spirit from without—as if the gods had gotten into him. What each of us may accomplish is greatly influenced by our attitude toward the assignment which is ours. I suppose that we could foul up almost any curriculum and still come out with a good educational achievement if good students and good teachers worked with enthusiasm at their tasks.

Our Sense of Values

And, finally, happy is the man or woman who begins early the lifetime job of keeping his conscience sensitive and his judgments sound.

These are our only guides to behavior when issues become complex and confused. The action we take depends upon how successful we have been in developing a sense of values by which we are willing to work and live, and upon the use we can make of the knowledge which we have been accumulating. If we have done our best here, then we have done all, except to go forward working, conforming and dissenting, but in all things insisting upon the moral freedom of our conscience and the intellectual freedom of our judgments.

Correspondence

To the Editor: I have just received the interesting publication of the Association of American Medical Colleges: On the preparation, admission, and programs for medical students published in Spanish.

I must congratulate you for this publication which I found very interesting and I think will be of great assistance in the development of the programs of reorganization that are carried on in medical schools in Latin America like ours.

Ramon Villarreal, M.D., Dean
Universidad Autonoma de San Luis Potosi
Facultad de Medicina
San Luis Potosi, S.L.P.
(Mexico)

Book Reviews

K. E. Penrod
Book Review Editor

A Textbook of Psychiatry

Sir David Henderson and the late R. D. Gillespie with the assistance of Ivor R. C. Batchelor. Oxford University Press, London. Eighth Edition. 1956. Pp. 744.

This textbook has been a standard in the field since it was first published in 1927. The present edition is the second revision since the death of the junior author, Dr. Gillespie, and the first with Dr. Batchelor as a collaborator. The book retains the same format as previous editions so familiar to the many students of psychiatry who have used this as one of their texts. This edition is a partial revision of the seventh edition. Thirteen of the chapters have undergone no change whereas the other seven have received minor to moderate modification.

Such partial revisions over the years have resulted in some ambiguity or lack of a systematic frame of reference with which the subject of psychiatry is presented. As in previous editions, the preface expresses the intent to present psychiatry from the psychobiological point of view. This intent is further amplified in the chapter on the psychiatry of childhood as follows: "There are two principal psychopathological views of the aetiology of adult mental illness. Both of these place primary focus in the formative years of childhood; but one view to which most attention is paid in this book regards the adult illness as a cumulative result of mental habits acquired and ingrained throughout childhood and adolescence; while the other regards it as a regression to particular emotional fixations or an erotic kind at the same period." This differentiation of dynamic views is not extensively pursued, however; though there is much variation in the consistency with which either of the above views is presented. Thus the chapters on general psychopathology, psychoneuroses, and the psychiatry of childhood take more cognizance of the emotional experiences of formative years than do the discussions of symptom formation, functional psychoses, psychopathic states, and war neuroses. This inconsistency is particularly noticeable in the many case histories presented throughout the book, as few of these report upon the emotional experiences of the patients during childhood and adolescence. Possibly these particular case histories were first included before this emphasis upon childhood experiences, and others have not been included to keep pace with the developments of knowledge in this area.

There is a wealth of descriptive material covering both functional and organic disorders and extensive description of the psychopathological symptoms of mental illness. There is, however, little discussion of the problem of differential diagnosis between organic and functional disorders. Physical treatments and occupational therapy are fully covered but no mention is made of tranquilizers, and there is no systematic discussion of the different systems of psychotherapy. Again, some sections seem more out-dated than is necessarily due to publication delays. An illustration is the opinion presented that no evidence is yet available to suggest that penicillin will supersede malarial or other pyrexial methods in the treatment of general paresis. Such delay in revision does have its positive aspects. Thus, case histories of involutional melancholia prior to the development of electro-shock therapy give some appreciation of the efficacies of this method of treatment in this disorder.

Discussions of the history of psychiatry, psychiatric examination, and legal aspects of psychiatry could be much more interesting in their scope and presentation. Despite its deficiencies, this text contains much information of value to the student of psychiatry. However, the book deserves a more thorough and systematic revision. Eugene S. Turrell, M.D. *Univ. of Colorado.*

The Compleat Pediatrician

Wilburt C. Davison, M. D. & Jeana Davison Levinthal, M.D. Pp. 357. Duke University Press, Durham, N. C. Seventh Completely Rewritten Edition. $4.25.

The Compleat Pediatrician fully lives up to its name for there is in this small volume an extraordinarily complete set of facts and figures relating to well child care and to disease in children. By virtue of its frequent revision it is kept up to date much better than most textbooks and by virtue of its modest cost replacement with a new edition is relatively painless. There are two types of material covered. Most of the book contains lists of clinical conditions, signs and symptoms and other facts bearing on diagnosis, which are cross referenced back and forth through the book. The second part of the book deals with laboratory procedures, nutrition and feeding, and norms of development. Almost all conceivable subjects are touched upon if with only a few lines.

This book is primarily valuable as a check list for diagnosis, as a quick reference to get a given clinical syndrome identified, or as a source of information for normal values, etc. It is much too brief and too dogmatic for student use in place of a textbook of pediatrics. Students will find it valuable for a quick reference but it can be recommended more strongly to the practitioner who has already learned about pediatrics and needs this as a memory jog or as a source of current fact. Robert L. Lawson, M.D *Univ. of Miami.*

Atlas of Clinical Endocrinology

H. Lisser, M.D. and Roberto F. Escamilla, M.D. C. V. Mosby Company, St. Louis. Pp. 476. $13.75.

Clinical endocrinology lends itself particularly well to pictorial presentation, since a number of the syndromes are readily recognizable at the bedside if the examiner is sufficiently experienced. The authors of this volume are well qualified clinical endocrinologists and have admirably presented their experiences, and those of their colleagues, with the use of 148 plates and 18 tables. This volume is divided into several sections, arranged according to endocrine glands with the addition of one section on miscellaneous, less well understood syndromes encountered by the practicing endocrinologist. In general, the photographic reproductions are excellent, and the pertinent clinical features of these diseases are well demonstrated. Unfortunately the photomicrographs of normal and abnormal histology are too few and insufficiently detailed to be effective, especially in the section of gonadal diseases.

As intended by the authors, the text is brief and tersely presents the essential historical, physical, laboratory and therapeutic features of each syndrome. For the most part, these are accurately recorded, and with the exception of therapy, are sufficiently detailed to be immediately useful. On the other hand, certain laboratory data are seriously misleading, for example: (1) the normal serum calcium values are set too high as judged by recent critical re-evaluation of this point in a number of clinics and laboratories, and (2) contrary to the authors' statement, some adrenocortical tumors producing Cushing's syndrome respond to ACTH stimulation with increases in urinary steroids comparable to that noted in bilateral adrenocortical hyperplasia. Finally, the book suffers by omitting a discussion of the basic biochemical aspects of the endocrine diseases. The latter is particularly notable in the sections on adrenal and thyroid diseases in which such valuable biochemical contributions have been made in recent years.

Both as an introduction to clinical endocrinology and an outline-type reference volume, this atlas will be of most value to the medical student, general practitioner and the specialist who deals infrequently with these diseases. The more sophisticated reader of endocrinologic literature will find little new information in this volume. Harry T. McPherson, M. D. *Duke Univ.*

ABSTRACTS

Slit Lamp Goniscopy

George Gorin and Adolph Posner. Williams and Wilkins Company, Baltimore. 1st Edition, 1957. Pp. 164.

This book is prepared as a manual for the ophthalmologist on the principles and techniques of goniscopy to guide him in the interpretation of his observations. It deals considerably with the anatomy of the chamber angle, the history and technique of goniscopy and the interpretation of findings in glaucoma and other diseases.

Shock and Circulatory Homeostasis

Transactions of the Fifth and Final (November 30, December 1 and 2, 1955) Conference, the Josiah Macy, Jr., Foundation. Edited by Harold D. Green. Pp. 318.

The pattern of conference and subsequent publication by the Josiah Macy, Jr., Foundation is now quite familiar. This volume comprises the fifth and final publication on this subject and covers nine papers and discussions.

Physiology of Prematurity

Transactions of the first Conference the Josiah Macy, Jr., Foundation. March, 1956. Princeton, New Jersey. Edited by Jonathan T. Lanman. Pp. 139.

In this, the first of a series of conferences to be held on this subject, the topics Circulation and the Glands of Internal Secretion are discussed. The portion on fetal-maternal endocrinology is under the direction of Dr. Lanman while the section on fetal and placental circulation is under the direction of Dr. Geoffrey S. Dawes.

Histology

Arthur Worth Ham. J. B. Lippincott Company, Philadelphia. 3rd Edition, 1957. Pp. 876, 682 illustrations.

The principle additions to the 3rd edition of this book are (1) a description and discussion of the significance of much fine structure as revealed by the electron microscope and (2) special consideration of the subject of transplantation of tissues. To provide background material for the first of these new features, chapter 4 deals with "electron microscopy and other special methods." A section dealing with the use of the light microscope has been added to chapter 3. In addition to the new features mentioned above, each chapter has been largely rewritten and extended to incorporate newer knowledge in the specific fields covered and all in all a largely new textbook has been produced.

Principles of Microbiology

Charles F. Carter and Alice L. Smith. C. V. Mosby Company, St. Louis. 3rd Edition, 1957. Pp. 606, 154 illustrations.

The primary purpose of this book has been to present to the interested student a brief general survey of the principles of microbiology with simple descriptions of the most important disease producing organisms and a discussion of the reaction of the animal body to contact with them. A second purpose of the book has been to point out the activities of microbes, which the authors believe to be of greater importance to man than the diseases which they bring about. In this the third edition, the authors have attempted a rather considerable revision to increase the usefulness of this text. Two new chapters have been added and many of the others rearranged. A number of new illustrations have been added and some of the old ones have been replaced.

Forensic Medicine

Douglas J. A. Kerr. Adam and Charles Black, London. Distributed by MacMillan, New York. 6th Edition, 1957. Pp. 342.

This book is not intended to be an exhausted work of reference, but is written as a textbook for students and a guide for the practitioner. The 6th Edition shows a general revision of the text. Most of the alterations are of a minor nature emphasizing some practical point of mentioning some new legal enactment. The laws referred to are those of England and Scotland.

General Diagnosis and Therapy of Skin Diseases

Hermann Werner Siemens. The University of Chicago Press, Chicago. 1st Edition, 1958. Pp. 311, 375 illustrations.

The present edition is a translation by Dr. Kurt Wiener of the German edition printed in 1952. Dr. Siemens has tried throughout to concentrate on the fundamentals of dermatology by thorough explanation and particularly by illustrations in close-up photography. In his chapters on therapy, he has tried to inculcate in the student the fundamental rules of common sense therapy. In particular, he is suspicious of complicated prescriptions, no matter how famous. Further he warns "instead of becoming a therapeutic butterfly that sips one blossom today and tomorrow from another, never really familiar with anything, learn how to master a small armamentarium and stick to it." The therapeutic part of the book is written in a spirit of scientific curiosity which changes everyday treatment from a monotonous routine to an interesting experiment. Even the most experienced dermatologist will likely pick up sound advice on many pages and will enjoy the graphic pictures and descriptions. The best point, however, which the medical student can learn from this book is the spirit of intel-

lectual discipline and honesty in which it is written.

Clinical Heart Disease

Samuel A. Levine. W. B. Saunders Company, Philadelphia and London. 5th Edition, 1958. Pp. 636.

The purpose of this book, whose first edition appeared in 1936, is to present in a simple form the important aspects of the diagnosis, prognosis and treatment of heart disease. It is meant to appeal to the general practitioner, and insofar as the information or the points of view that it contains are applicable at the bedside and available to any intelligent physician, just so far will it be useful. The 5th edition of this book is an attempt to bring it up to date in accordance with the advances of the past 6 years. In the main these advances have centered around new and bold surgical techniques on the heart bringing about the necessity for more complete and accurate diagnosis. In addition the newer advances in the field of electrocardiography and vectorcardiography have been incorporated in the chapter "Clinical Electrocardiography." After an introductory chapter the various important types of heart disease are considered in no specific order. Each chapter is thus independent of the others.

Anesthesia

Stuart C. Cullen. The Year Book Publishers, Inc. Chicago, Ill. 5th Edition. Pp. 282.

Through the various editions of this book the author has made a strenuous effort to avoid dogmatism born of incomplete information and understanding in the complex field of anesthesia. The changes made in this edition have been further in this direction and only material of fundamental nature directed at assisting the student and physician in acquiring a basic approach to the solution of problems in anesthesia has been included. The book is thus a manual for all students (undergraduate or graduate) and physicians rather than a practical guide for the general practitioner. The chapter on Use of Depressant Drugs has been entirely revised in an attempt to change the emphasis from a consideration of the patient and his needs. Some information has been added and much obsolete information has been deleted from this edition. Changes in the concept of problems and the approaches to their solutions have been made.

Office Gastroenterology

Albert F. R. Andresen. W. B. Saunders Company, Philadelphia and London. 1st Edition, 1958. Pp. 639.

The advances made in the field of gastroenterology since the publication of the three volumes by Bockus have spawned this monograph based on the personal experience of the author. For 40 years, he taught gastroenterology to students, interns and physicians in the Long Island College Hospital. The author has attempted to present the material, based originally on physiological concepts applied to diagnosis and treatment, in such a way as to encourage the reader to think for himself, to give no treatment without good reason. An attempt has been made to arrange the material in this book in a logical sequence. First, an introductory chapter covers the general concepts of gastrointestinal physiology, pathology and treatments, including a simplified discussion of dietary indications. The reading of this chapter is essential to the understanding of the subsequent parts of the book. There follows a section on diseases which may affect any part of or the whole gastrointestinal tract, including a chapter on intestinal parasites. Following this are sections covering diseases of each individual part of the G. I. tract, the liver and biliary tract, and finally a section on general diseases with manifestations in the G. I. tract.

A Textbook of Clinical Neurology

Israel S. Wechsler. W. B. Saunders Company, Philadelphia and London. 8th Edition, 1958. Pp. 733.

The 8th edition of this well-known textbook is appearing 31 years after the first. The new volume once more endeavors to include most if not all clinical neurological problems which confront the student and practitioner. To bring the book up to date many important advances made in the past 5 years have been incorporated in the text. New facts and new syndromes have been added, much has been rewritten, what appeared dated in the light of newer knowledge has been deleted, and many new references have taken the place of old ones. A brief description of the hypothalamic syndrome has been included. A chapter on the Epilepsies and the Convulsive State has been considerably revised. The chapter on Neuroses has been retained but revised.

Gynecologic and Obstetric Pathology, with Clinical and Endocrine Relations

Emil Novak and Edmond R. Novak. W. B. Saunders Company, Philadelphia and London. 4th Edition, 1958. Pp. 628, 683 illustrations.

The father and son team of Novaks have made a rather complete revision of this, the 4th edition of this book. This edition is appearing after the death of the senior Novak. The material is written by the Novaks with the exception of a new chapter on cytopathology written by John K. Frost and two chapters written by Robert E. L. Nesbitt. Certain portions of the previous edition that were now out-dated have been deleted and the remaining material has received a general revision and the bibliography has been expanded. In many instances old illustrations have been replaced by more appropriate and better ones.

An Introduction to Medical Mycology

George M. Lewis, Mary E. Hopper, J. Walter Wilson and Orda A. Plunkett. The Year Book Publishers, Inc., Chicago. 4th Edition, 1958. Pp. 442.

Since the publication of the 1st edition of this book 18 years ago rapid strides have been made in this field. In the present edition two new authors have joined with Dr. Lewis and Miss Hopper and the book should be considered a joint effort. Major changes have been made in the format. In this edition the clinical and laboratory phases are not separated and each of the various pathogenic fungi are so considered. Furthermore, a beginning has been made to abandon some time honored clinical designation as no longer valid, in favor of an etiologic approach, believing this is the ultimate goal in the understanding and in the description of disease processes.

Practical Allergy

M. Coleman Harris and Norman Shure. F. A. Davis Company, Philadelphia. 1st Edition, 1957. Pp. 435.

This text is based on the experience of the authors in teaching senior medical students at the College of Medical Evangelists. It is founded on the premise that a major portion of allergy practice currently is in the hands of the general practitioner and of the specialist whose practice is not limited to allergy and who does not devote much of his time to this important and increasing phase of medical practice. Despite numerous post-graduate courses offered each year and the voluminous literature available on this subject, the knowledge of the part-time allergist probably has not kept pace with his increasing practice. To some extent this is due to the apparent controversies and paradoxes which one notes when trying to read the current literature on allergy in medical journals and in available textbooks. Thus there is, it was felt, a need for a comparatively simple textbook which any doctor can use and refer to for the handling of diseases of allergic origin.

Emergencies in General Practice

Edited by Hugh Clegg. British Medical Association, London. First Edition, 1957. Pp. 461.

This book contains selections from the series of articles published in the British Medical Journal in 1955 and 1956 under the heading "Emergencies in General Practice" and brought up to date by the contributors early in 1957. The term "emergencies" has been interpreted fairly widely. While most of the conditions discussed are acute clinical emergencies where prompt and skillful treatment is essential, others are emergencies in a different sense, as in acute psychiatric states, accidents related to drugs or anethesia and emergency calls when the doctor is isolated as on a ship. As the title suggests, this book is intended first for the general practitioner. It will likewise be of value to the senior student, the house staff physician and to those supervising their work in hospitals.

Modern Perinatal Care

By Leslie V. Dill. Appleton-Century-Crofts, Inc., New York. 1st Edition, 1957. Pp. 229.

In recent years—particularly since World War II—there has been a considerable revolution in attitudes toward obstetric practices and even toward the pregnant woman herself. Many factors have combined to require the re-evaluation of older concepts and reconsideration of procedures. This book has as its aim the crystallization of present day thought and care of the woman antipartem and postpartem. The word "modern" in the title connotes "current," for obsolescence in obstetrics is governed by utility rather than by time. With the thought of utility in mind, outlines for therapy of medical conditions are given

as an aid to those practitioners for whom consultation is not readily available. Among the obstetric problems discussed are abortion, pelvic mensuration, toxemias and anemias of pregnancy, the fourth stage of labor, and the complications to pregnancy arising from such conditions as heart disease, diabetes mellitus, thyroid disorders, tuberculosis, and venereal diseases. Attention is given to nutrition in pregnancy and to the psychologic aspects of pregnancy. Various problems relative to the infant are also considered: fetal mortality, birth injuries, congenital malformations and infant feeding. The obligations and regulations imposed upon the obstetrician by the law are reviewed, and an attempt is made to clarify the position of the Catholic Church on various obstetric problems.

From Sterility to Fertility

Elliot E. Philipp. Philosophical Library, New York. Pp. 118.

This book is written for the layman by a specialist in problems of fertility. It is conceived as a method of best explaining to the patient the common causes of sterility and the background information for the tests necessary to deduce the specific causes. Since the doctor profits from intelligent cooperation of the patients, both husband and wife, this book will be a help in obtaining this cooperation by making the patients more aware of what is going on.

Clinical Physiology, The Functional Pathology of Disease

Edited by Arthur Grollman. 26 contributors. McGraw-Hill, New York. First Edition, 1957. Pp. 854, 105 illus.

The purpose of this book is to present to the Senior medical students, the intern and the practitioner the basic physiologic principles of clinical medicine. The term "physiologic" is used here in its broad sense and includes much that is usually considered part of the biochemical, pathologic, pharmacologic and bacteriologic sciences. It is used in the sense in which Claude Bernard defined it as "the experimental basis of medicine." No attempt has been made to completely cover the subject of physiology or clinical medicine. Emphasis has been placed on those aspects of medical sciences which in our present stage of development have a practical application to the daily practice of medicine. Since the greatest advances have been made in the metabolic, cardiovascular and endocrine fields, these subjects have received a preponderance of attention, with less complete coverage of subjects covered adequately in other available textbooks. An attempt has been made to correlate the results of clinical research and laboratory experimentation and to present a composite picture of these as applied to medical practice.

In medical education today, much emphasis is being placed on the need for correlation of the basic disciplines—physiology, chemistry, pathology and pharmacology—with clinical medicine. This book may be considered as offering such a correlation, and it is anticipated that it may serve as a text in the third and fourth year curriculums and aid to integrate the basic fundamentals with clinical teaching.

Signs and Symptoms, Applied Pathologic Physiology and Clinical Interpretation

Edited by Cyril M. Macbryde. 28 contributors. J. B. Lippincott Company, Philadelphia. 3rd Edition, 1957. Pp. 923, 191 illus.

This book attempts, so far as present knowledge permits, to give the basis for analysis and interpretation of some of the commonest symptoms which bring patients to the physician. Emphasis is placed upon the pathologic physiology of the symptom, while its correlation with other symptoms and with physical and laboratory evidence is considered as important but secondary in the diagnostic method. This book approaches diagnosis as the physician must when studying patients. In each chapter a major sign or symptom is analyzed, and the processes causing it are clarified by considering whatever influences are important in anatomy, pathology, physiology, chemistry and psychology. Knowledge in the field of pathologic physiology has developed rapidly in recent years; therefore, every chapter has been thoroughly revised and several have been completely rewritten. Three new chapters have been added on important subjects not included in previous editions: chapter 2 on growth and sex development, chapter 12 on generalized vasospasm and arterial hypertension, and chapter 23 on Lymphadenopathy and disorders of the lymphatic system. This revised and enlarged 3rd edition should prove to be increasingly

useful to practicing physicians, to teachers and students of medicine.

Chronic Illness in the United States

Four volume report of the Commission on Chronic Illness, under the Chairmanship of Dr. Leonard W. Mayo. Published for the Commonwealth Fund by Harvard University Press, Cambridge, 1957.

The Commission on Chronic Illness, a national voluntary group, worked from 1949 to 1956 on the problem. During that time they published a number of reports, both under Commission auspices and jointly with other organizations. At the conclusion of the 7 year program, the commission authorized the preparation and publication of a general report on chronic illness in the United States. This report is in four volumes titled as follows:

1. Volume 1—Prevention of Chronic Illness. 281 pages plus appendices.
2. Volume 2—Care of the Long Term Patient. 473 pages plus appendices.
3. Volume 3—Chronic Illness in a Rural Area. (To be published)
4. Volume 4—Chronic Illness in a Large City. 338 pages plus appendices.

Perinatal Loss in Modern Obstetrics

Robert E. L. Nesbitt, Jr. F. A. Davis Company, Philadelphia, Pp. 357, 103 illustrations.

This book attempts to integrate various fields of knowledge as they relate directly or indirectly to the problem of perinatal loss, whether this relationship pertains to fetal and neo-natal death or to one or another of the distressing remote sequela of child birth. An effort has been exerted to provide practical as well as basic information. An attempt has been made in this text to overcome the lack of clear cut and acceptable definitions and classifications of perinatal deaths which have deterred progress in this field for many years. Wherever possible the text has been supplemented with statistical tables and graphic illustrations. Likewise effort has been exerted to provide extensive and workable bibliography on each subject for students interested in further study. Physicians engaged in obstetrics, pediatrics, pathology, and anesthesiology as well as general practitioners will find this book rewarding reading—indeed, essential reading—if they are to keep abreast with modern developments in this important field.

BOOKS RECEIVED

Science Looks at Smoking. By Eric Northrup. Coward-McCann, Inc., New York. 1957. 190 pages. $3.00.

Methodology of the Study of Ageing. Ciba Foundation Colloquia on Ageing, Volume 3. Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor. Little, Brown and Company, Boston. 1957. 196 pages. $6.50.

Year Book of Cancer. 1956-57 Series. Edited by Randolph Lee Clark, Jr., and Russell W. Cumley. The Year Book Publishers, Chicago. 1957. 557 pages.

A Book of Contemplation. By Dagobert D. Runes. Philosophical Library, New York, 1957. 140 pages. $3.00.

Ten Million and One. Neurological Disability as a National Problem. Arden House Conference sponsored by the National Health Council. Harper & Brothers, New York. 73 pages. $3.50.

Fear: Contagion and Conquest. By James Clark Moloney. Philosophical Library, Inc., New York, 1957. 128 pages. $3.75.

World Book Periodicals. Second Edition, prepared by L. T. Morton. World Medical Association, New York, 1957. 340 pages. $6.00.

Die Gezielte Diagnostik in Der Praxis. Robert N. Braun. Friednich - Karl Schattauer - Verlag, Stuttgart. 1957. 175 pages.

Guide to Medical Terminology. Wallace and Anne Clark. F. A. Davis Co., Philadelphia. 1956. 130 pages.

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Items of Current Interest

The John and Mary R. Markle Foundation

Medical School Faculties aided by $750,000 Markle Fund Grants

The John and Mary R. Markle Foundation has announced the appointment of 25 scholars in medical science, to faculty members of medical schools in the United States and Canada. For each scholar appointed, the Foundation has allocated $30,000 to the school at the rate of $6,000 a year for 5 years.

The purpose of the program is to strengthen medical education by offering academic security and financial help to teachers and investigators in medical schools early in their careers. In the 11 years the plan has been in operation, 231 doctors in 74 medical schools in the United States and Canada have received help from appropriations totaling $6,800,000.

The 25 Markle Scholars in Medical Science whose appointments begin in 1958, their fields of interest, and the medical schools that will receive the $30,000 grants toward their support for the 5 years, 1958-63 are:

University of Buffalo School of Medicine, Buffalo, N. Y., MURRAY N. ANDERSON, M.D., *Surgery.*

Baylor University College of Medicine, Houston, Texas, NEIL R. BURCH, M.D., *Psychiatry.*

Western Reserve University School of Medicine, Cleveland, O., WILLIAM R. DRUCKER, M.D., *Surgery.*

Medical College of Virginia School of Medicine, Richmond, Va., RICHARD H. EGDAHL, M.D., Ph.D., *Surgery.*

Albert Einstein College of Medicine, Yeshiva University, New York, N.Y., DAVID HAMERMAN, M.D., *Internal Medicine.*

University of Michigan Medical School, Ann Arbor, Mich., HAROLD F. HARDMAN, Ph.D., *Pharmacology.*

Queen's University Faculty of Medicine, Kingston, Ont. ROBERT F. HETHERINGTON, M.D., D.Phil., *Neurological Surgery.*

University of Pennsylvania School of Medicine, Philadelphia, Pa., EUGENE A. HILDRETH, M.D., *Internal Medicine: Allergy.*

University of North Carolina School of Medicine, Chapel Hill, N.C., WALTER HOLLANDER, JR., M.D., *Internal Medicine: Metabolism.*

University of Saskatchewan College of Medicine, Saskatoon, Sask., GERALD H. HOLMAN, M.D., *Pediatric Endocrinology.*

Johns Hopkins University School of Medicine, Baltimore, Md., JAMES P. ISAACS, M.D., *Surgery.*

Northwestern University Medical School, Chicago, Ill., ROBERT B. JENNINGS, M.D., *Pathology.*

Cornell University Medical College, New York, N.Y., THOMAS KILLIP, III, M.D., *Internal Medicine: Cardiovascular.*

Yale University School of Medicine, New Haven, Conn., JACK WAYNE LOVE, D.Phil., *Physiology.*

University of California School of Medicine, Los Angeles, Calif., JAMES V. MALONEY, JR., M.D., *Surgery.*

University of Alberta Faculty of Medicine, Edmonton, Alta., LIONEL E. McLEOD, M.D., *Internal Medicine.*

University of Oklahoma School of Medicine, Oklahoma City, Okla., RENE B. MENGUY, M.D., Ph.D., *Surgery.*

University of Wisconsin Medical School, Madison, Wis., ROBERT L. METZENBERG, JR., Ph.D., *Biochemistry: Medical Genetics.*

University of Colorado School of Medicine, Denver, Colo., DONOUGH O'BRIEN, M.D., *Pediatrics: Biochemistry.*

Vanderbilt University School of Medicine, Nashville, Tenn., GUY OWENS, M.D., *Neurosurgery.*

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University of Kansas School of Medicine, Kansas City, Kan., NED W. SMULL, M.D., *Pediatrics.*

University of Tennessee College of Medicine, Memphis, Tenn., GERALD B. SPURR, Ph.D., *Physiology.*

University of Western Ontario Faculty of Medicine, London, Ont., DONALD P. SWARTZ, M.D., *Obstetrics and Gynecology.*

Harvard Medical School, Boston, Mass., ULLRICH GEORG TRENDELENBURG, M.D., *Pharmacology.*

University of California School of Medicine, San Francisco, Calif., WILLIAM L. WEBICH, M.D., *Surgery: Cardiac Physiology.*

National Society for Medical Research

Three new programs were launched on February 11 at the Annual Meeting of the National Society for Medical Research.

The first is a conference program aimed at bringing more consistency and logic to the various state and local laws governing medical research.

The second new program has the purpose of improving the design of laboratory animal quarters. An NSMR staff architect will accumulate experience data and provide expert consultation.

The third of the Society's new activities is a program to educate the public on the importance of student experiments with animals. The Society's Board of Directors adopted a statement of policy on student experiments that has been given widespread publicity.

Public Health Service

Dr. I. S. Ravdin, Professor of Surgery at the University of Pennsylvania, has been elected chairman by the Board of Regents of the Public Health Service's National Library of Medicine.

The establishment of a National Advisory Committee on Radiation has been announced by Dr. Leroy E. Burney, Surgeon General of the Public Health Service.

The committee will advise the Surgeon General on the further development of Service programs dealing with public health aspects of radiation from all sources.

MEND News

On February 8, deans and coordinators of the ten medical colleges whose MEND affiliation became effective on January 1, 1958 met at the Palmer House in Chicago. A total of 28, including representatives of other schools, attended this all-day meeting, which was held to familiarize the participants with the details of MEND and with MEND activities scheduled for the balance of the current academic year.

Planning has been completed for the 1958 MEND Orientation Tour for deans and coordinators, which will be held on March 19-28. Planned to orient representatives of the more recently MEND-affiliated schools with medical and operational aspects of the armed forces, the Tour will include visits to Naval installations in San Diego, California, and to Air Force and Army installations in San Antonio, Texas. A total of approximately 35 participants is expected.

The Rockefeller Foundation

Dr. Virgil C. Scott has been appointed assistant director for Medical Education and Public Health, with responsibility for fellowships, of The Rockefeller Foundation. From 1954 to 1957 Dr. Scott was professor and head of the department of medicine of the American University of Beirut, Lebanon. Prior to 1954 Dr. Scott was associate professor of preventive medicine and of internal medicine at Washington University, St. Louis, Missouri.

Dr. Lucien A. Gregg, assistant to the chancellor for Health Affairs and professor of medicine at the University of Pittsburgh, will visit India during the spring of 1958 on behalf of The Rockefeller Foundation. Dr. Gregg will discuss with the Minister

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References: 1. J.A.M.A. 158:386 (June 4) 1955.

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of Health of India the possible assignment of an American medical advisor to the Director of the All India Institute of Medical Sciences.

Fellowships for Research In Clinical Nutrition

The Nutrition Foundation, Inc., in cooperation with the Council on Foods and Nutrition of the American Medical Association is awarding a number of fellowships for research in clinical nutrition for medical students. The money will be used during the non-academic* portion of the school year at a rate of $200 per month. Applications should be filled with the Council at 535 North Dearborn Street, Chicago 10, Illinois.

News from the Medical Schools

Columbia

Dr. WILLARD C. RAPPLEYE, dean of Columbia's faculty of medicine and College of Physicians and Surgeons since 1931, and vice president for Medical Affairs since 1949, will retire on June 30, and will be succeeded by Dr. HOWARD C. TAYLOR, Jr., it was disclosed by President Grayson Kirk. Dr. Taylor, who was graduated from Columbia's medical school in 1924, is now professor and chairman of the department of Obstetrics and Gynecology.

Howard C. Taylor, M.D.

Dr. Kirk, in a tribute to Dr. Rappleye, stated "In his many years as a teacher and administrator of medical education, Willard Rappleye has gained a well-deserved national reputation. He has been one of the country's most influential representatives of medical education and a leading interpreter of the profession's problems and objectives. My close association with him has been one of the rewarding experiences of my work at Columbia."

Dr. Taylor has served on the staffs of several leading New York hospitals and has been a consultant in others. He has taught at the University of Pennsylvania and at New York University, and has occupied his present post at Columbia since 1946. He is editor of the American Journal of Obstetrics and Gynecology; a director of the American Cancer Society; president of the American Gynecological Society, and a member or Fellow of many international, national and New York professional societies and committees.

Baylor

Dr. JOSEPH L. MELNICK will join the faculty of Baylor University College of Medicine on July 1, 1958, as professor of virology and epidemiology and chairman of the department of epidemiology. Dr. Melnick is well known for his contributions to the studies of the polio virus and its epidemiology. He is presently chief of the virology section, Division of Biological Standards of the National Institutes of Health.

Boston

As a new step in its long range development program, Boston University's board of trustees has voted to

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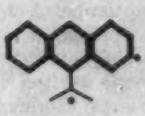

match a federal grant in the amount of $1,500,000 for the construction of a $3 million medical school research building, according to an announcement by President Harold C. Case. The university will embark upon an immediate campaign to raise the necessary matching funds in order that construction of a modern, functional building devoted to research in clinical and basic medical sciences may be started early in 1959.

A Law-Medicine Research Institute, the first of its kind in the United States, has been established at the university. The Institute, working cooperatively with the university's schools of law and medicine, headed respectively, by Deans ELWOOD H. HETTRICK and CHESTER S. KEEFER, will establish a program of research and training in the interdisciplinary areas of law, medicine, and behavioral sciences. It will also act as a clearing-house for information on activities in the medico-legal area.

Named as director of the Institute is Professor WILLIAM J. CURRAN of Newton, Mass., presently a professor of law and legal medicine at Boston University. Aiding Professor Curran with the Institute is a university administrative committee, consisting of Curran, Dean Hettrick of Wellesley, Mass. and Dr. HENRY J. BAKST of Brookline, Mass., professor of preventive medicine and coordinator of rehabilitation.

Dr. HERBERT H. WOTIZ, associate research professor of biochemistry and associate director of the hormone research laboratory, will return to his native Vienna for the first time in 20 years, to address the Fourth International Biochemical Congress for his work on hormones and their relation to cancer. In addition to speaking at the congress, which will be held September 1-6, he will make a study of primary and secondary schools during his trip abroad. He has also been invited to lecture in Paris, France; Bonn, Heidelberg, Frankfurt and Tuebingen, Germany; and Basel, Switzerland.

Buffalo

Dr. ERNEST WITEBSKY, professor of microbiology, has been appointed acting dean until September 1958.

Harvard

Uses and limitations of radiation and radioactive substances in the clinical treatment of diseases will be the substance of the 1958 Dunham Lectures to be delivered at the Harvard Medical School by Dr. JOSEPH STANLEY MITCHELL of Cambridge, England, March 10, 12, and 13. Dr. Mitchell is Regius Professor of Physics at the University of Cambridge and Director of the Radiotherapeutic Center in Addenbrooke's Hospital, Cambridge.

Missouri

Dr. WARD DARLEY, Executive Director of the Association of American Medical Colleges, has accepted the invitation of the University of Missouri School of Medicine to give the Assembly Lecture sponsored by the school of medicine. Dr. Darley will speak on Wednesday, April 23, 1958, at 8:00 P.M. in the Auditorium of the Medical Center. He will speak to the assembly of faculty and student body about medical education, the physician-patient relationship, and the art of medicine.

New York Medical

Dr. GEORGE R. NAGAMATSU, who is internationally known for his research in the field on kidney and adrenal surgery, has been appointed director of the department of urology and professor of urology at New York Medical College, Flower and Fifth Avenue Hospitals.

N. Y. U. - Bellevue

Dr. JAMES A. SHANNON, director of the National Institutes of Health, Bethesda, Maryland, received the New York University College of Medicine Alumni Association 1958 scientific award and was principal

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speaker on Alumni Day, Saturday, February 22, at ceremonies dedicating the new Alumni Hall (31st Street and First Avenue) of New York University-Bellevue Medical Center.

Dr. SVEND M. CLEMMESEN, Copenhagen, Denmark, will be the first Louis J. Horowitz visiting professor of physical medicine and rehabilitation at New York University-Bellevue Medical Center's College of Medicine.

New York University-Bellevue Medical Center is offering a Three-Months Training Fellowship with a stipend in neuroanatomy and neurophysiology, beginning September, 1958.

Tulane

"Medical Schools and Affiliated Hospitals" will be the theme of the meeting of Southern Association of Medical Schools and Teaching Hospitals in New Orleans, Sunday and Monday, April 13 and 14. Tulane and Louisiana State University medical schools and the Charity Hospital of Louisiana are the host institutions. Principal speakers are Dr. John Nunnemaker, Director of Education Services of the Veterans Administration, Washington, D.C., and Dr. Edward Legeroos, former director of the Division of Graduate Education and hospitals of the Council of Medical Education and Hospitals of the A.M.A. and presently director of the Ochsner Foundation Hospital in New Orleans.

Dr. MAXWELL E. LAPHAM, Dean, has announced that a chair in Epidemiology has been inaugurated in the medical school by Mr. and Mrs. Charles E. Inbusch of Milwaukee, Wisconsin. The new chair will be known as the Dr. William Hamilton Watkins professorship in epidemiology and is named for the father of Mrs. Inbusch.

Washington

Dr. ERIC REISS, assistant professor of medicine and preventive medicine and American Cancer Society scholar in medicine, has been appointed director of the Irene Walter Johnson Institute of Rehabilitation currently under construction at the medical center.

Wisconsin

Dr. W. THEODORE BRUNS, a former member of the department of pediatrics, U.C.L.A., is a new member of the department of pediatrics. Dr. Bruns was born and educated in Germany where he received a degree in Medicine from the University of Gottingen. Dr. Bruns will serve as assistant to the director of the new Respiratory Center.

Dr. FRANK C. LARSON, department of medicine, has accepted the appointment as director of the Clinical Laboratories and as director of the program in Clinical Pathology for the medical school. Dr. Larson will assume the new position July 1, 1958, upon the retirement of Dr. W. D. STOVALL from these responsibilities. He will also continue as a member of the department of medicine.

With the arrival of Dr. WALTER ARTELT of Frankfurt, Germany, as a visiting professor at the medical school, the department of history of medicine has again become activated. Dr. Artelt is the director of the Institute for the History of Medicine at the University of Frankfort, Frankfurt on the Main, Germany.

Yale

Dr. WAYNE O. SOUTHWICK, a member of the Johns Hopkins medical faculty, has been appointed associate professor of orthopedic surgery and head of the Section in Orthopedics. Dr. Southwick will leave Johns Hopkins and assume his new duties at Yale next July 1.

The Personnel Exchange

Faculty Vacancies

PROFESSOR OF PATHOLOGY★IRAN

Applications are invited for the Chair of Pathology, University of Shiraz, Shiraz, Iran. Contract basis for 2-4 years. $5,000 will be sent to home address in 12 months. A monthly salary of 25,000 rials will be paid (enough for himself and family to live comfortably in Shiraz). Air tickets will be provided for himself and family. Position should be filled by October 1958. Contract terms and information available by writing to: Dr. Zabih Ghorban, Chancellor of the University, Shiraz, Iran.

• INSTRUCTOR IN ANESTHESIOLOGY: Position will be available after April 1 1958 at University of Miami School of Medicine. Write J. Gerard Converse, M.D., professor in anesthesiology, University of Miami School of Medicine at Jackson Memorial Hospital, Miami 36, Fla.

• INSTRUCTOR IN PHYSIOLOGY: Full-time staff. Position available July 1, 1958 in department of physiology at state-supported medical school. *Requirements:* Ph.D. or M.D. Experience and interest in teaching at the medical school level. Training, capability and interest in independently conducted cardiovascular research. *Duties:* Lecture and laboratory presentation of physiology to medical students and nurses. Establish and develop program of research in cardiovascular physiology. Salary: approx. $6500. Approximately half-time available for research. John M. Brookhart, Dept. of Physiology, Univ. of Oregon Medical School, Portland 1, Oregon.

• UNIVERSITY OF BRITISH COLUMBIA, Vancouver 8, B. C., Canada requires a full-time staff member in preventive medicine in the faculty of medicine. Applicants should be graduates in medicine with interest in epidemiological investigation. Salary and academic rank commensurate with training and experience. Address inquiries to: Dr. James M. Mather, Professor of Public Health.

• CLINIC DIRECTOR: Clinic Director to January 1960. Administrative and teaching post, while present director on leave of absence. Internal medicine background preferred but not essential. Address: J. P. Tollman, M.D., Dean, University of Nebraska College of Medicine, Omaha, Nebr.

• BIOCHEMIST: Ph.D. To take part in research projects on the biochemistry and physiology of the myocardium, with time available for independent work. In pathology department, with university appointment if qualified. Salary $6-8000 a year. Address: V-84.

• ANATOMIST: Full-time position in midwestern medical school; teaching and research. Rank and salary dependent upon experience and qualifications but Ph.D. or M.D. degree minimal. Address: V-85.

• PATHOLOGIST: Associate in department of pathology. Position available immediately in an active clinical and teaching laboratory, in both pathological anatomy and clinical pathology. Opportunity for personal research and advancement. Private clinic with affiliated hospital and medical school affiliation. Apply to Administration, Guthrie Clinic, Sayre, Pa.

• PRINCIPAL SCIENTIST: Ph.D. in biochemistry for fully equipped radioisotope laboratory in 1000 bed hospital affiliated with medical college. Major function to develop research program. To be advisor for other biochemical research involving radioisotopes, and to supervise laboratory and personnel. Will have faculty appointment. Salary $7,465-10,065. Address replies to: Radioisotope Service, Veterans Administration Hospital, Albany, N. Y.

• ANATOMIST: Assistant professor or instructor for medical and dental school teaching, prefer experience in teaching gross anatomy. Address: V-86.

• CARDIOVASCULAR PHYSIOLOGIST: A new faculty position in physiology has been created at the University of South Dakota by a long-term grant from the South Dakota Heart Association. The holder is to devote at least ¾ time to basic research in the general area of cardiovascular physiology with less than ¼ time for teaching and other duties. Faculty rank is to be commensurate with training and experience. The salary range is from $8,000 to $10,000 annually. Direct inquiries to Medical Advisory Committee, Heart Association c/o Office of the Dean, University of South Dakota, School of Medicine, Vermillion, South Dakota.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

• PATHOLOGIST: Age 28, single. M.D. 1955, University of Belgrade Faculty of Medicine, Yugoslavia. Year rotating internship in Canada. Desire position as research assistant in American medical school or research institute. Prefer pathological physiology. Immigrating to USA. Address: A-324.

• ANATOMIST: M.A. (Glasgow), M.R.C.V.S. (Edinburgh), M.B., Ch.B. (Glasgow). Former lecturer Scottish University, now in British Colonial University. Desires senior teaching post, U.S.A. or Canada where histological research facilities are available. Teaching experience: regional anatomy and histology; some neuroanatomy, embryology. Free September 1958. Address: A-325.

• PHYSIOLOGIST: Ph.D., male, 28. Desires academic position with both teaching and research opportunities. Currently holding rank of instructor and research associate. Teaching experience with medical, graduate, dental, nursing and undergraduate students. Research experience in cardiovascular physiology, aviation physiology and endocrinology. Publications. Address: A-326.

• INTERNIST: Board eligible, teaching experience. Excellent recommendations, interested in a teaching position. Address: A-327.

• SURGEON: Cardiovascular-thoracic-general. 36; 7 years training university centers; MS (Surgery); research background physiology, pathology, cardiac and general surgery. Formerly Section Chief, VA teaching hospital. Completed Part I, ABS. Experienced in open cardiac procedures, hypothermia, extra-corporeal circulation. Desires full-time or part-time teaching position with clinical and laboratory research. Address: A-328.

• SURGEON: Cardiothoracic. Certified general and thoracic surgery. M.S. Surgery. Extensive clinical and experimental experience in open heart surgery. Publications. Desires full-time academic position. Available July. Address: A-329.

• PREVENTIVE MEDICINE: Age 32. M.D., Harvard, 1953, M.P.H., Harvard, 1957. Currently completing new 2-year program for teachers of preventive medicine at Harvard School of Public Health. Desires full-time association with department of preventive medicine. Available June 1958. Address: A-330.

• ORTHOPEDIC SURGEON: Age 43, F.R.C.S. British Subject, veteran. Desires academic post with hospital work in one of the smaller medical centers. Address: A-331.

• PHYSIOLOGIST: Age 34. M.B.B.S., M.Sc. (Med.). Ten years teaching and research experience in physiology. Interested in teaching and research with opportunity to complete Ph.D. degree. Prepared to work on stipend or fellowship. Address: A-332.

• PHARMACOLOGIST: Ph.D. Single. Instructor in medical college. Desires new teaching/research position with opportunity to complete studies for M.D. degree. Address: A-333.

• PHYSIOLOGIST: Male, 36. Eight years experience in teaching and research in medical school. Present position, assistant professor of physiology. Primary research interests: mammalian respiration, neurochemistry. Desires position in teaching and research. Address: A-334.

• PHARMACOLOGIST - TOXICOLOGIST: Age 35, strong cardiovascular and biochemical background; good experience and recommendations. Desires hard work challenging position with commensurate remuneration and future. Will attend Federation meetings. Address: A-335.

• MICROBIOLOGIST: Ph.D., qualified in microbial physiology and genetics, biochemistry,

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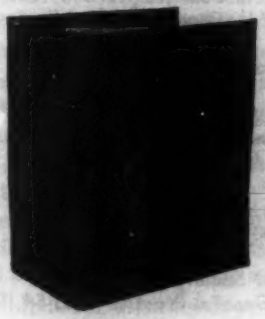

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and medical bacteriology; seeks faculty or full-time research position. Address A-336.

• ENDOCRINE PHYSIOLOGIST: Ph.D., age 35. Presently assistant professor of physiology engaged in graduate and undergraduate teaching and research in endocrinology, cell physiology, and animal physiology. Formerly research associate in physiological chemistry. Publication. Desires to relocate. Academic or full-time research. Address: A-337.

• PHYSIOLOGIST: Age 29, male. To receive Ph.D. in June of 1958. Have had teaching experience in medical school. Currently assistant instructor in department of physiology and pharmacology. Ph.D. work on glycogen fractions of myocardium. Address: A-338.

• PHYSIOLOGIST: Ph.D., 35; Four years experience medical school teaching, 5 years research experience, 21 publications on carbohydrate and fat metabolism. Present rank assistant professor. Desires academic appointment with research opportunities. Address: A-339.

• BIOLOGIST-ANATOMIST: Ph.D., male. Teaching and research experience in anatomical and physiological sciences. Have taught microscopic anatomy and physiology. Research publications. Wishes teaching and research position in another region of the country. Address: A-340.

• ANATOMIST: Ph.D., male. At present assistant professor of anatomy. Six years experience. Have taught complete courses in Gross Anatomy, Embryology, and Neuroanatomy. Published textbooks and research. Desires relocation to another section of the country. Address A-341.

• PHYSIOLOGIST: Ph.D. Assistant professor in medical school wishes to relocate. Primary interest is in endocrinology. Wish for a position with teaching and research facilities. Grants may be transferred. Address: A-342.

• HEMATOLOGIST-INTERNIST: Age 33. Board eligible. Broad clinical, research, teaching experience in hematology, radioisotope. Will consider any challenging position. Available immediately. Address: A-343.

• GASTROENTEROLOGIST: Age 33. Board certified, with four years full-time experience in gastroenterology, primarily in university hospital. Research experience and publications; membership in Am. Fed. Clin. Research, Am. Gastroscopic Society. At present assistant professor; seeking better opportunity for research and teaching, will consider geographical full-time, preferably Northeast or South. Address: A-344.

Publications

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association headquarters office, 2530 Ridge Avenue, Evanston, Ill.

Booklets

Medical Education Today ($1.50).
Admission Requirements of American Medical Colleges—1957-58 ($2.00).
Fellowships, Funds and Prizes Available for Graduate Medical Work in the U.S. and Canada—4th edition, published 1954 ($1.50).
By-Laws of the Association of American Medical Colleges (Revised 1955).
Minutes of the Proceedings of the Annual Meetings (1947-57 Minutes now available).
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Journal supplements available:

The National Health Service of Great Britain ($1.00).
Education of Physicians for Industry ($2.00).
Trends in Medical Practice ($2.00).
Support of Research by American Cancer Society ($1.00).
An Analytical Study of North Carolina General Practice 1953-54 ($2.00) paperbound; $3.00, clothbound.
Survey of Women Physicians graduating from Medical School 1925-40 ($1.00).
Suggestions for Supplementing the Medical Curriculum in Time of National Emergency.
Medical Education for Foreign Scholars in the Medical Sciences ($1.50).

Teaching Institute Reports ($2.00 paperbound, $3.00 clothbound).

Report of the Conference on Preventive Medicine in Medical Schools (Report of the 1952 Institute).
The Teaching of Physiology, Biochemistry and Pharmacology (Report of the 1953 Institute).
The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Institute).
The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Teaching Institute).
The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

Medical Audio-Visual Institute Publications

Film Catalog, Fall 1955 and Supplements.
Reprints from the Audiovisual News Section of the Journal of MEDICAL EDUCATION.
Films in Psychiatry, Psychology and Mental Health (available from the Health Education Council, 92 Belmont Drive, Livingston, N.J.)
Films in the Cardiovascular Diseases (Part I available from the American Heart Assn.), 44 E. 23rd St., New York 10, N.Y. ($2.00).
Part II available from the Medical A-V Institute ($2.00).

Publications of Related Organizations

Hospitals Participating in the Matching Program 1958 (NIMP).
Results of the Matching Program 1958 (NIMP publication).
The Student and the Matching Program 1958 (NIMP publication).
Medical College Admission Test—Bulletin of Information 1957 (Educational Testing Service publication).
Psychiatry in Medical Education—1951 Conference ($1.00).
The Psychiatrist: His Teaching and Development—1952 Conference ($2.50).
(The above can be obtained from: American Psychiatric Assn., 1785 Massachusetts Avenue, NW, Washington, D.C.).

Individual Membership

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Individual Membership, at only $10 a year, is open to any person who has demonstrated a serious interest in medical education over a period of years. All the privileges of membership and a provisional membership card are granted immediately after payment of the $10 fee, although confirmation must await official action at the next Annual Meeting.

To obtain membership, fill out the application form below, append check for $10, and return to the Association's central office at 2530 Ridge Ave., Evanston, Ill.

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